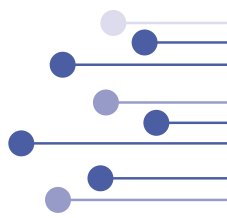


# Generating and Shaping Ideas

Tradition and Innovation



## Overview

As indicated in Chapter 1, research in science acknowledges the past as it looks to the future. These two views, one back and one forward, take the form of reviewing the literature (looking back) and then generating hypotheses that advance literature (looking forward). The research should enable us to answer the question, “What’s new and noteworthy here?” Thus, research combines tradition and innovation.

In building on a theme of Chapter 1, it is useful to try to generate some ideas before you consult the literature. Why? Because once you look at what other people have done, that information may influence how you think about a particular topic. In other words, consulting the literature as your first step may limit the range of ideas you consider. After you have generated possible research areas, consulting the literature is next.

This chapter will emphasize the “looking back” part of the process by discussing sources of ideas, techniques for tracking down articles about your ideas, and approaches to reading that literature once you obtain it (that is, how to identify what’s important). A significant portion of the chapter focuses on library resources and using them to locate and obtain articles.

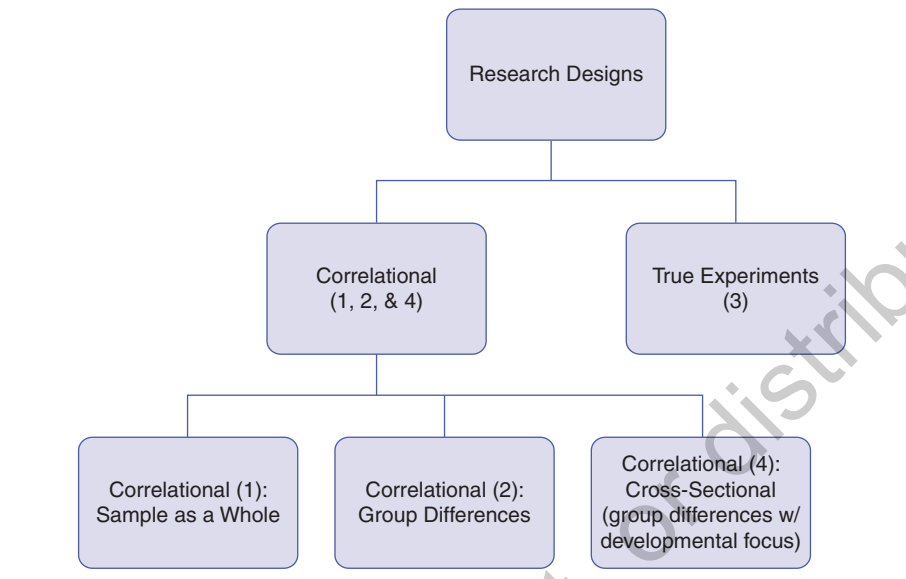
The chapter will look forward by including examples of research questions that are broad versus narrow, considering the role of what are called *third variables*, that is, variables that are unmeasured and can undermine the relationships we seek to measure. A recommended timeline for conducting research in a single semester is provided. The chapter will conclude with a definition and discussion of academic fraud. Plagiarism, a particular kind of academic fraud, is covered in Chapter 13 in the context of writing up research.

## Chapter highlights

- Overview
- Sources of ideas
- Using library resources
  - Reference materials, Library of Congress classification system
  - Keywords—what they are and how to use them
  - Using PsycINFO (truncation, subject headings, times cited)
  - Google Scholar® versus the Web
- Kinds of useful articles (primary vs. secondary sources; reviews, meta-analyses)
- How journals differ in quality (including predatory publishers)
  - Journal publication practices
  - File drawer effect
- How to obtain an article physically

(Continued)

Figure 2.1 Diagram of Common Research Approaches



- (3) College Students' Attitudes Toward Individuals With Seen and Unseen Disabilities
- (3) Think Before You Speak: Perceived Authority of Women's Voices in the Workplace
- (3) Gender Perceptions in Hiring: Effects of Hair Color on Predicted Capabilities of Female Job Applicants
- (3) Perceived Femininity of Women Weightlifters
- (4) Mental Health of First- and Fourth-Year Students

These titles are examples of projects done by students taking a course in research methods—for most their first research project. These projects have been divided into four categories (see the numbers in parentheses by the project title; Figure 2.1). These categories will be topics in future chapters. Projects in Category 1 represent what are called *correlational projects* (there is no manipulation of variables and results are about the sample as a whole; a common correlational statistic is Pearson's  $r$ ; see Chapters 3 and 7). Projects in Category 2 are also called correlational in the sense that there is no manipulation of variables, but these projects differ from those in Category 1 in that they include a consideration of group differences.

Statistics are typically a *t* test, analysis of variance, or multivariate analysis of variance, depending on how many groups and outcomes there are (see Chapters 3 and 7). Projects in Category 3 are true experiments. In these projects, variables are manipulated (e.g., the hair color of female job applicants). Statistics are typically a *t* test, analysis of variance, or multivariate analysis of variance, again depending on how many groups and outcomes there are. Note that the statistics in Categories 2 and 3 are the same, but only in Category 3 are there true experiments (see Chapter 9). Category 4 illustrates a special case of the group difference approach in correlational approach: cross-sectional design. In cross-sectional design, the researcher is typically looking at people (here students) who represent different points of development or maturation, but the data are collected at one point in time because there is no possibility to follow student development over a long period of time in a semester-length project. Cross-sectional research approximates this developmental progression at a single point in time by contrasting students of different class years, for example (see Chapter 7). The end of the book (see Appendix A, Figure A.1) includes a more complete statistical decision tree if you want a refresher on which statistical test is appropriate for several common research approaches.

**Institutional review board (IRB):** Deliberate body that evaluates research with human subjects; required where institutions receive federal funds for research but typically established at an institution where research is conducted.

**Human subjects:** With regard to the federal definition (45 CFR 46), involves living individuals from whom the researcher obtains data, including biospecimens, through an interaction or intervention, or about whom the research obtains personally identifiable information or biospecimens.

## Common Student Research Themes

What themes do you see in these projects? It makes sense for students to pick topics related to some aspect of their experience—media, gender, race, achievement, sports, relationships (with peers, with parents, with siblings), substance use, and health. On occasion students undertake topics related to some medical or emotional problem familiar to them, for example, a relative or acquaintance with a seen or unseen disability. Doing such research is possible, although it requires great care and sensitivity. There is a difference between asking people about their attitudes toward sensitive topics, such as those with seen and unseen challenges, and asking people *with* those challenges to participate in the research. In general, projects that study sensitive topics (e.g., individuals who are taking medication for Parkinson’s disease) and/or vulnerable populations (e.g., individuals with autism or children) require a series of permissions from “gatekeepers,” a process that involves a full meeting of your institution’s **institutional review board (IRB)**; a committee that evaluates the risks and benefits and ethical issues involved in research done with **human subjects**; see Chapter 4). Such involved projects are better suited to courses longer than a semester, such as a two-semester senior honors study or graduate thesis.

A word about nomenclature—the federal guideline (the revised Common Rule) that governs research with humans retains the use of the term “subjects” in reference to human beings, whereas the American Psychological Association’s Code of Ethics uses “participants” and reserves “subjects” for research with infra-human species. In this book, the term subjects will be used when referencing the revised Common Rule, its underpinnings (e.g., *The Belmont Report*; federal legislation), or its jurisdiction (e.g., IRBs).

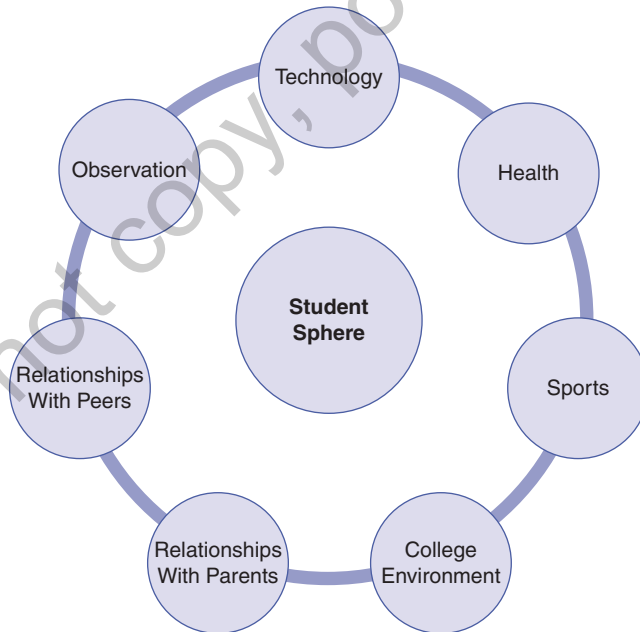
Research ideas often emerge in situations where people are trying to solve a practical problem, such as those who work in your institution's offices of dining services, buildings and grounds, campus safety, or housing. For example, offices connected to student life are interested in the amount of money spent to maintain the facilities that students use. Investigations of graffiti, litter, breakage, and other concerns may produce useful and meaningful research projects. People who work in these offices are important sources of information (and ideas).

One distinction made in types of research is whether the research is basic or applied. In **basic research**, the aim is to test fundamental principles or theories, with an expectation that the knowledge would be generalizable beyond a particular set of circumstances. The goal is to add to the base of scientific knowledge, without an expectation that a practical problem will be solved en route. In **applied research**, the focus is on solving a particular real-world problem (e.g., reducing graffiti in residence halls), with a particular set of conditions or circumstances. The scope may be relatively narrow. However, even when the research is applied, it can still be framed in the context of a theory. For example, applied research on residence hall design may be framed in the context of theories of crowding.

**Basic research:** Research that focuses on testing fundamental theories or principles, with the goal of generalization.

**Applied research:** Research designed to answer practical questions; typically contrasted with basic research.

Figure 2.2 Sources: The Student Sphere



Finally, simply observing what goes on around you can produce good ideas for research. Some investigators find it helpful to carry a small notebook (or use a smartphone) to jot down ideas that occur to them in the course of daily life, whether it is the length of time it takes you to find a specific product when the grocery store changes its organization of products by aisle or the clientele of a particular bar or restaurant and its associated ambiance. A particular restaurant in town went out of business within a year of opening, and some patrons attributed this closure to the negative reviews of the restaurant's service posted on Yelp.com. Investigating people's belief in the validity of such reviews (and whether they had ever written a review themselves) and more broadly in the validity of information on social media might make an interesting research project. What these examples indicate is that ideas for research surround us. Many very good research projects come from observations of daily life.

### **Ideas: Academia and Media**

Before starting a course in research methods, students may have taken one or two introductory survey courses and possibly one or two more advanced content courses (i.e., courses that focus on a defined domain within a particular discipline). If students are majoring in psychology, such content courses might be in personality, social, or health psychology. In human development, these courses might focus on individual differences or social development. In sociology, possibilities might be courses dealing with sex, gender, and society; social movements; or ethnic and race relations. A colleague of mine teaches a course called "Race, Ethnicity, and Baseball in the US," which includes the role of baseball in the assimilation of immigrants. Courses are a great source of ideas, from the topics covered and theories presented to the research approaches used.

### **Theses, Research Groups, and Departmental Publications**

Other possibilities for research ideas include past honors theses or even masters' theses in your department. Unpublished honors theses and published research are similar in that they typically include a section dealing with limitations of the study or directions for future research. These theses are also a useful source of measures and scales (see Chapter 5) because such projects typically require that appendices include all items in the measures, which is not common in published research.

Your department may have research groups run by professors. Attending these groups is beneficial—in particular, hearing about other people's research and the suggestions made to improve it. Because being part of such a group reflects initiative, this experience is useful in graduate school applications. Research experience is highly valued in evaluating candidates for graduate school. Aside from graduate study, potential employers are impressed by this initiative as well; it may set you apart.

## Conferences and Undergraduate Journals

At conferences, many poster presentations (see also Chapter 13) are from students or the collaborative work of students and professors. Abstracts from the local, regional, national, or international association meetings in a discipline (e.g., psychology, neuroscience, sociology, environmental design, and anthropology) provide sources of ideas for research. As an example, Figure 2.3 is a photograph of an installation of posters for a session at an environmental psychology conference, the XV Congreso Internacional de Psicología Ambiental – PSICAMB 2019, held at the Universidad de La Laguna in Tenerife, Spain.

During poster sessions, a condensed version of the research paper is posted on a bulletin board of some sort. Student researchers stand near their posters, ready to answer questions from conference attendees.

Guidelines for how to create a successful poster are discussed in Chapter 13. Even if you do not attend such conferences, your professors can share the online program with you as a way to search the presentation topics. Many conferences are moving away from distributing a paper program (as a result of sustainability and other cost concerns), and online programs are easily searchable.

In addition, many colleges and universities publish journals of undergraduate student work (see <http://www.cur.org/>), and some national journals publish student work (e.g., *American Journal of Undergraduate Research*). Psi Chi, the International Honor Society in Psychology, also publishes a journal of psychological research. Not only do these publications provide resources for generating

Figure 2.3 Poster Presentation Example



Photo © Ann Devlin, courtesy of Boris Jeneric

a research idea, but they also serve as possible publication outlets for completed student projects.

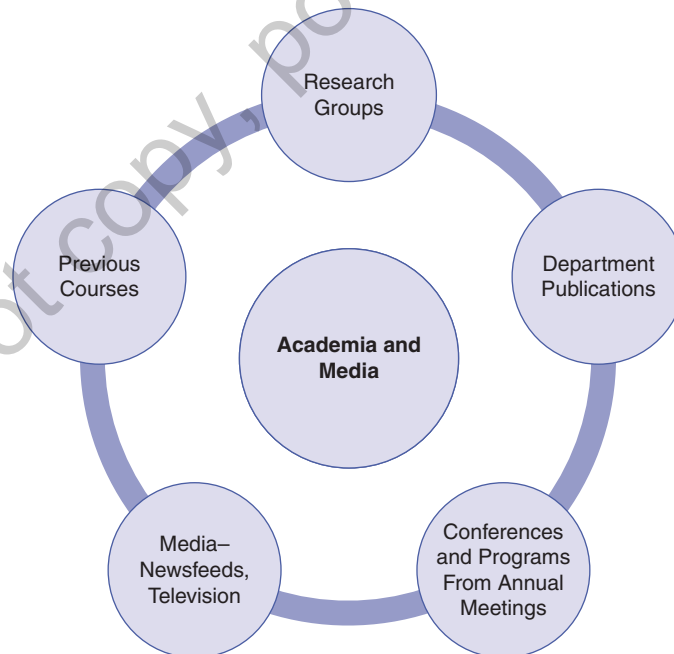
## Media

The media are excellent sources of ideas, from *The New York Times* and *The Wall Street Journal* to *The National Enquirer* and TMZ.com. In all likelihood, you will access media from a variety of platforms. One drawback to some online news sources is what is called the **digital paywall**, which limits Internet users' access to the publication without a paid subscription. For that reason, accessing these publications through your library's databases (the institution pays the subscription) is recommended.

**Digital paywall:**  
Limits Internet users' access to the publication without a paid subscription.

In 2014, a survey of how Americans get their news reported that most Americans had consulted four different platforms for news in the previous week and that the most frequently consulted devices were "television (87 percent), laptops/computers (69 percent), radio (65 percent), and print newspapers or magazines (61 percent)" (American Press Institute, 2014, para. 4). Sources of news vary tremendously in their point of view (liberal to conservative), their perceived credibility, and the news stories they emphasize (you might already be thinking about a research project that investigates the news publications and platforms consulted by students in different majors, for example).

Figure 2.4 Sources: Academia and Media



*Wall Street Journal.* The *Wall Street Journal (WSJ)* is an excellent source of ideas, especially for technology in the workplace, career strategies, or employment trends. The WSJ has columns and blogs devoted to many of these topics. The digital version is useful in that the dropdown menus (e.g., for Business) list all the industries covered. Technology is a particular strength of the publication.

*Chronicle of Higher Education.* If your interest is education, the *Chronicle of Higher Education* is a comprehensive place to start. Articles in the *Chronicle* may focus on curricular issues in higher education (e.g., student evaluation of instruction or core requirements), personnel issues (e.g., Title IX and sexual harassment, including romantic relationships between professors and students), or student culture (e.g., the Greek system or the role of athletics). The publication has a free daily online newsletter; premium content requires a subscription (potentially available through your institution). This publication has sections on a range of topics, including “Technology” and “Campus Spaces.” For example, a recent article in the section on Technology talked about virtual reality in the classroom and its challenges (McMurtrie, 2019) and one on campus spaces talked about steps that have been taken to make such spaces more accessible (Biemiller, 2019).

*Television.* Regarding television, Nielsen ratings of viewers’ habits are a good source of ideas (<http://www.nielsen.com/us/en/solutions/measurement/television.html>). Nielsen measures far more than television viewing; it also assesses music, retail, and food sales (e.g., top-selling brands for a particular week), which are accessible to some degree through its “top 10s” ratings (<https://www.nielsen.com/us/en/top10s.html>).

## Revisit and Respond 2.1

- Why might it make sense to think of some ideas before consulting the literature?
- What advantages are there to using your personal experience to develop research ideas?
- Write down two potential research ideas that come out of your personal experience and two that come from the Internet.

## Ideas: Information Services, aka the Library

When recently speaking to a librarian about student use of the resources in the library, her perspective was that students often want to use the sources that are expedient (e.g., full text) and exhibit occasional impatience in cases where resources must be ordered. In addition, she stated that students often don’t know what to do with an article once they obtain it—that is, they don’t know what is



worth spending time on. Another issue she raised was students' lack of awareness of what could be found in a book chapter versus a journal article. She stated that students don't seem to understand the "container" in which the information is delivered (i.e., book chapter, journal article, open access online article); for them, she said, "Everything is an article!" In her view, students are not able to distinguish the source from its potential value. In this chapter, I will try to provide you with the tools to change her mind about students!

For library users, materials can be accessed in a variety of ways, which this chapter will cover. Libraries own a collection of current and bound journals, books, newspapers, magazines, visual media, and government documents available to you. What they don't own can be accessed through electronic databases or loans from the collections of other institutions.

## Ideas: Searching Effectively in the Library

---

To search for materials effectively, it is helpful to know how collections in the library are organized. Some aspects of libraries are essentially the same across institutions, independent of size. Libraries in the United States use the Library of Congress Classification System for the call numbers of books. To get a better idea of what topics are covered under which letter classifications of the Library of Congress classification outline, try <http://www.loc.gov/catdir/cpsol/lcco/>. Then you can click on the hyperlinked letter (e.g., B), which will take you to the subclass (B, BC, BD . . . BX). If you want, you can then examine a subclass in more detail. As an example, B is linked to Philosophy, Psychology, and Religion.

### Library Holdings

A useful starting strategy is to look at your library's holdings through its electronic catalogue. You will need to use some search terms or **keywords** you have thought of or identified (e.g., by looking at the relevant thesaurus in your discipline, such as the *Thesaurus of Psychological Index Terms* [11th ed., revised] for psychology). As an example, a recent search looking up the keyword "personal space" for materials (books and media) limited to my institution, yielded 1,099 entries covering a wide range of topics, from art to medicine, which are in some way related to the topic of personal space. Expanding the search to include online *sources* of materials available on that topic, the number of listings for personal space jumps to 1,876,667! What this example dramatically shows is that the vast majority of resources available to researchers are accessible online. Nevertheless, it is useful to understand what is available through other avenues.

**Keywords:**  
Search terms  
for information  
retrieval.

---

### Reference Section: Encyclopedias and Handbooks

The reference section has many useful handbooks and encyclopedias to obtain and refine ideas. Because each institution will be different, this next section will

provide examples using psychology as the discipline rather than a comprehensive listing.

## Psychology and Other Social Sciences

The Psychology section under the Library of Congress heading “BF” has a variety of reference materials related to psychology, including encyclopedias of psychology and handbooks that include specialized topics (e.g., alternative reality). You will also find dictionaries or handbooks on fundamental topics such as emotion, stress, intelligence, and health. A small sample of the reference volumes you might typically find under the heading “BF” is as follows:

*Encyclopedia of Psychology*, Volumes 1–8 (Kazdin, 2000)

*Encyclopedia of Perception*, Volumes 1–2 (Goldstein, 2010)

*Encyclopedia of Human Intelligence*, Volumes 1–2 (Sternberg, 1994)

*APA Dictionary of Psychology* (2nd ed.) (VandenBos, 2015)

*The Dictionary of Psychology* (Corsini, 2002)

*Handbook of Child Psychology* (4 vol., 6th ed.) (Damon & Lerner, 2006)

The Reference section is also a good place to find sourcebooks of research measures and test critiques, a topic covered in more detail in Chapter 5:

*Measures for Clinical Practice*, Volumes 1–2 (Corcoran & Fischer, 2013)

Under “H” in the Library of Congress headings, you are likely to find more general coverage of the social sciences (e.g., *Dictionary of the Social Sciences*; Calhoun, 2002) and coverage of topics traditionally found in sociology. For example, HM-HQ includes important sources of attitudes such as the *Gallup Poll Cumulative Index: Public Opinion 1998–2007* (Gallup & Newport, 2008). Other topics indexed under this heading include sexuality, women’s issues, and criminal behavior.

Under “L” in the Library of Congress heading are topics in education. Particularly useful are sources about research in education, and there are many volumes related to the work of the Educational Testing Service.

### Try This Now 2.1

Physically go to the library at your institution, identify the Library of Congress call numbers in your area of interest, and see what reference books are on the shelf.

## Revisit and Respond 2.2

- What is the Library of Congress classification system?
- What is a keyword?
- What kinds of resources would you expect to find in the Reference section?
- In what ways can librarians help with your research project?

Material related to medicine is found under “R” in the Library of Congress heading. Examples include *Handbook of Community Psychiatry* (McQuistion et al., 2012) and *The SAGE Handbook of Health Psychology* (Sutton et al., 2004).

### Reference Materials: Style Guides and Thesauruses

In addition to handbooks and encyclopedias, the Reference section also typically includes style handbooks such as the *Publication Manual of the American Psychological Association* (APA, 2020); the *MLA Handbook for Writers of Research Papers* (Gibaldi, 2009); *The Chicago Manual of Style* (University of Chicago Press, 2017), used by the American Anthropological Association, which also has its own downloadable style guide; and the *ASA Style Guide* (2010), used by the American Sociological Association.

The reference section also includes an array of thesauruses, such as the *Thesaurus of Psychological Index Terms* (Tuleya, 2007), which can be helpful when you begin database searches for articles (see later section in this chapter on “Thesaurus of Psychological Index Terms”). Electronic databases such as **PsycINFO** also include a parallel thesaurus function that is updated periodically. PsycINFO is a database managed by the American Psychological Association; it includes article citations, summaries, and bibliographic material.

**PsycINFO:**  
Electronic  
database of  
citations and  
summaries from  
the American  
Psychological  
Association (APA),  
with over 4 million  
records.

### Online Reference Resources: Dictionaries and Encyclopedias

In addition to bound volumes, colleges may also offer online dictionaries and encyclopedias, which are useful for general overviews of topic areas (the encyclopedias) or for looking up the derivation of words in the case of a source like the *Oxford English Dictionary*. Common sources for a library to offer online are the *Encyclopedia Britannica* and the *Oxford English Dictionary*. Often these online sources will be available under a heading like “Reference Tools” or “Online Reference Sources,” which may be accessible from the library’s home page.

## Subject and Research Guides

Colleges and universities may also develop their own list of subject and research guides, which offer specific kinds of help to students including the proper form of citations. Typical offerings are links to citation generators such as **BibMe** (that will autofill information about a source you have located); links to **RefWorks** (a Web-based bibliographic and database manager); links to APA resources; to MLA resources; to Chicago resources; to Turabian (a style guide named after the original author); and links to instructions about how to cite government documents.

**BibMe:** Free bibliographic tool that automatically fills in the citation information; useful for a variety of citations styles, including American Psychological Association (APA).

## Electronic Resources and Keywords

Beyond the print and online reference sources and bound volumes, libraries offer a range of **electronic databases**, both general and discipline specific. Most of your search for materials will use these electronic databases.

**RefWorks:** Bibliographic management tool.

## Keywords: The “Key” to Success

Before proceeding, a fuller discussion of keywords is in order. Whatever the stage of your search (beginning or further along), and whether you target journals, books, or other sources of materials, your search will be more effective if you choose appropriate keywords. As mentioned, keywords are search terms for information retrieval. In most journals, for example, authors are asked to provide five or six keywords (words or phrases) for their article that represent the focus of the work. In the case of journals that follow APA style, these items are listed right under the Abstract (Figure 2.5).

**Electronic databases:** Electronic searchable collection of materials; useful in research.

Keywords are important for both authors and users because keywords link the search terms you use in a database to articles that use those keywords. In a recent article looking at the stress patients feel in hospital rooms (Andrade & Devlin, 2015), the authors evaluated Roger Ulrich’s (1991) theory of supportive design (a theory that predicts what types of elements in design will reduce patients’ stress). The authors selected the following keywords: hospital rooms, design, patients’ stress, and Ulrich’s theory of supportive design.

### Try This Now 2.2

Are some of those terms more effective than others, in your view? Which ones? Why?

Figure 2.5 Example of an Abstract With Keywords Listed

### Abstract

The Stereotype Content Model proposes that competence (or alternatively, agency) is a fundamental dimension of stereotypes. According to this model, beliefs about agency are partially due to the status relations between groups, such that high status groups are perceived to possess agency, whereas low status groups are perceived to lack agentic characteristics. Despite the considerable support for this model, the psychological processes that produce these stereotypes have not been fully explored. In the current studies, we examined whether the correspondence bias may be partially responsible for the stereotype that members of low status groups lack agentic characteristics, relative to those who belong to high status groups. Across both studies, a measure of the correspondence bias predicted such stereotypical beliefs, even after accounting for variables that are known to be associated with beliefs about high and low status groups. This effect was observed when beliefs about the status of groups were experimentally manipulated, and when we measured stereotypical beliefs about two sets of actual high and low status groups.

attribution    correspondence bias    stereotype content model    stereotypes

*Source:* Nier, Bajaj, McLean, & Schwarz (2013). Group status, perceptions of agency, and the correspondence bias: Attributional processes in the formation of stereotypes about high and low status groups. *Group Processes & Inter group Relations*, 16, 476–487.

## PsycINFO

Because it is so heavily used in research in the social and behavioral sciences, this book will emphasize PsycINFO. As mentioned, PsycINFO is a database of citations and summaries offered by the American Psychological Association.<sup>1</sup> The database covers journals, books, technical reports, and dissertations in psychology and psychology-related disciplines such as psychiatry, medicine, nursing, education, sociology, anthropology, and linguistics. In December 2015, the number of records offered in PsycINFO surpassed 4 million (<https://www.apa.org/news/press/releases/2015/12/psycinfo-database>).

In PsycINFO, when you enter a keyword and click on the “Suggest Subject Terms” option, related terms appear, which might give you other ways to search for a topic of interest. For example, if you enter the search term “environmental psychology” and click on “Suggest Subject Terms,” pages of terms appear, presented in order of relevancy. Beneath the term “environmental psychology,” the next most relevant term is “ecological psychology” (see Figure 2.6).

<sup>1</sup>For purposes of illustration here, PsycINFO is being accessed through EBSCOhost, an online reference database system. Your institution may use EBSCOhost or one of the other online reference database systems, such as OVID. The Web interface may have a different graphical presentation in these different database systems than the examples used here.

Figure 2.6 Screenshot of Suggested Subject Terms in PsycINFO

**Browsing: PsycINFO -- Thesaurus**

environmental psychology

Term Begins With  Term Contains  Relevancy Ranked

Page: [Previous](#) | [Next](#) ▶

Select term, then add to search using:

(Click term to display details.)

<input type="checkbox"/>	Environmental Psychology
<input type="checkbox"/>	Ecological Psychology
<input type="checkbox"/>	Environmental Adaptation
<input type="checkbox"/>	Noise Effects
<input type="checkbox"/>	Environmental Planning
<input type="checkbox"/>	Psychological Terminology
<input type="checkbox"/>	Environmental Stress
<input type="checkbox"/>	Environmental Policy
<input type="checkbox"/>	Environmental Enrichment
<input type="checkbox"/>	Environmental Effects
<input type="checkbox"/>	Environmental Education
<input type="checkbox"/>	Environmental Attitudes
<input type="checkbox"/>	Psychology of Women
<input type="checkbox"/>	Jungian Psychology

Source: PsycINFO®.

## Thesaurus of Psychological Index Terms

A thesaurus of index terms can be useful to students in selecting the most effective keyword to search the literature on a given topic. The thesaurus is usually arranged in such a way that if you look up a particular term, you will see terms that are both broader and narrower. Often students initially enter keyword terms that either lead to “zero” hits or 1,000 hits; that is, the search leads to no or few relevant articles or so many that it would be overwhelming to sort through them. If you look up the keyword “terrorism” in the PsycINFO database, for example, you will get more than 9,000 hits. A recent search consulting the thesaurus function of PsycINFO under “terrorism” showed the year the term was introduced to the tracking citation system (1982), a definition (Scope note), two broader terms “antisocial behavior” and “violent crime,” two narrower terms “bioterrorism” and

“counterterrorism,” and a list of eight related terms in alphabetical order. Entering one of these terms, “Radical Movements,” into the PsycINFO keyword search function produced 502 hits, which is a more manageable place to start (if this is the direction you are heading).

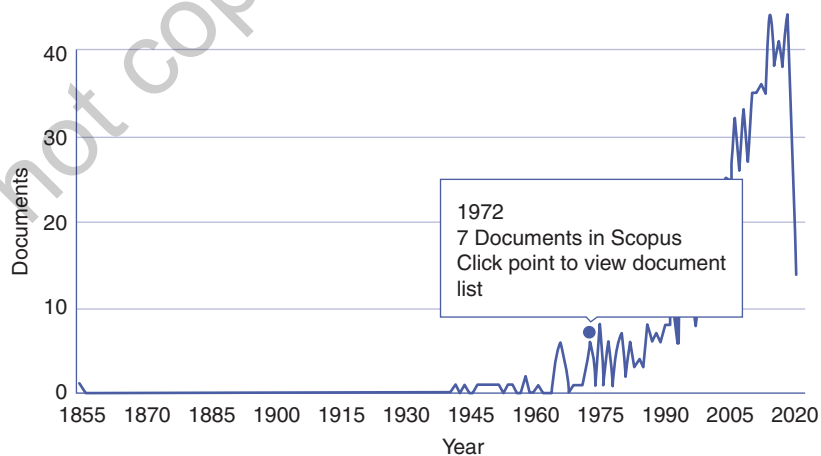
Another way to manage the number of “hits” you have is to use the “Subject: Major Heading” listing. After you have entered “terrorism” as a search term, look over at the left-hand column of PsycINFO, which is labeled “Refine Results” and you will see several headings including “Limit to,” “Source Types,” and “Major Heading.” Under Subject: Major Heading, I saw *terrorism*, *violence*, *war*, *posttraumatic stress disorder*, *emotional trauma*, and *disasters*, each with the number of articles associated with that term. You may be interested in *emotional trauma*, which has far fewer references, by a factor of 10, than does *terrorism*. This kind of information is helpful in managing your search to avoid becoming overwhelmed. To become more adept at doing searches, you might want to work through a search exercise with a reference librarian.

At the very least, an indexing thesaurus or its online equivalent will give you other keywords to test out. Using the appropriate keyword is critical to accessing the published work in a given area. That is why becoming familiar with the Thesaurus function of the electronic database you are using is essential.

## Other Techniques in Searching: Truncation and Times Cited

Scheduling a session with a staff member in your library can acquaint you with the tools that will maximize your search efforts. Library professionals are there to assist

Figure 2.7 Graph in Scopus Showing Number of Documents Related to Search Term “Residence Hall” by Year



Source: Copyright © 2019 Elsevier.

students, and not infrequently students find such staff members more approachable than the course professor. Some institutions have a designated library liaison for a department or group of departments. Course instructors can invite such staff members to class at the beginning of the semester to explain useful search techniques and how to set up special accounts, such as those used to borrow materials from other institutions (e.g., interlibrary loan, ILL). With that introduction to the library liaison in class, students may be more willing to follow up with individual appointments.

Regarding maximizing search efforts, useful terms to understand are *truncation*, *advanced searching*, *cited by*, and *analyze search results*. In a database, a truncation tool, often an asterisk (\*), may be added to the root of a word to capture multiple endings of the word. This approach will help you broaden your search to capture closely related words. MIT has a useful guide to using truncation (<http://libguides.mit.edu/c.php?g=175963&tp=1158679>), and its website on this topic shows that using a truncation approach with the word “child\*” could also produce *childs*, *children*, *childrens*, and *childhood*, all of which might be useful. An asterisk (\*) is the truncation tool in PsycINFO. In Advanced Search (staying with PsycINFO as our platform), you have the opportunity to refine or limit your results. You could do so with many different parameters, including age groups, publication type, whether peer reviewed, methodology (you might be interested only in empirical studies), supplemental materials (e.g., 3-D modeling images), and so on.

A very useful function is the “times cited in this database” option (in PsycINFO) or “cited by” (in Scopus, another useful database). This option tells you what other published research (in that database) has cited the particular article you selected. This information is very helpful if you pick an article that may have been written 10 or more years ago and you want to see who has referenced it (and possibly does related work on it) recently. Scopus also has the nice feature of showing you the publication pattern in a particular topic, that is, how many articles dealing with a particular topic were published in a given year. In that way, you can see the ebb and flow of interest in a topic. For example, if you enter the search term “residence hall\*” in Scopus, you see 860 documents (in June 2019). If you click on the option “analyze search results,” it will produce a graphic representation as well as a frequency count of the number of articles published on that topic (in this case, from 1855 to the present) (see Figure 2.7).

You can see that there was some interest through the 1970s and 1980s (related to the beginning interest in environment-behavior research), but that there has been a fairly steady increase in publication on the topic since the late 1990s. In 2014, 38 articles on this topic were published, but this was down from 44 in 2013. It will be interesting to see whether this area is declining in interest. In contrast, if you put in the search term “student anxiety” (June 2019), you get 22,591 “hits.” When you analyze the search results, you learn that 1,289 articles on the topic were published in 2014, with a dramatic increase of interest in the topic starting around the year 2000. Graphically, such information from Scopus shows the number of published resources that are available and the level of interest in the topic.



## Other Databases and Indexes in the Social Sciences

It is important to be familiar with commonly used databases. Some of the most common databases and indexes in the social sciences are Academic OneFile, Web of Science, PsycINFO, Scopus, SocINDEX, Anthropology Plus, AnthroSource, and Science Direct. Often, under the heading Databases and Indexes, there is the option to access the list alphabetically or by subject. For example, in many library systems, if you click on “listed by subject” under Databases and Indexes (to find journal articles), a list of subject areas appears alphabetically (e.g., from Africana Studies to VAST: Academic Video Online). You can click on the subject area of interest (e.g., education, psychology, or sociology) and a list of the databases in that subject area appears. The other option is an alphabetical list of databases and indexes, for example, from A and ABI/Inform to W and WorldCat. If you don’t know the names of the databases typically used in your field, then the subject listing is a better starting point.

**Google Scholar:** Search engine for academic resources.

**JSTOR:** Electronic database that provides access to articles usually 3–5 years (the moving wall) behind the current issue.

**Project Muse:** Electronic database of current articles that includes more than 600 scholarly journals in the social sciences and humanities.

**Nexis Uni:** Electronic database, which is almost always full text and covers approximately 11,000 sources of news, business, legal, medical, and reference publications.

**Google Scholar** is a search engine that searches academic resources. The results of a search in Google Scholar should not be confused with the results of a search you would get from a general Google search (more on that soon), which would include public Web content. There is a link to Google Scholar on the Databases page of my institution’s electronic library resources, reflecting the fact that the library staff members think Google Scholar is an acceptable tool for scholarly work. There is some research suggesting that the results of a Google Scholar search produce citations as scholarly as those from an equivalent database search (Howland, 2010). Is Google Scholar recommended *over* a database such as PsycINFO? Although there is overlap, Google Scholar may not provide as much access to full text links as traditional library databases do, increasing the number of steps you need to take to obtain those full texts.

### General Databases

In the social sciences, broad and commonly used databases and indexes are Academic OneFile (covering more than 8,000 journals); ERIC (Education Resources Information Center), which is funded by the U.S. Department of Education and covers education and related issues; and **JSTOR** (short for “journal storage”), which is full text for more than 2,600 scholarly journals. What distinguishes JSTOR, as its name suggests, is that it provides back issues of journals, usually 3–5 years (described as a moving wall) behind the most current issue of a particular journal. **Project Muse** is an electronic source *for current journals* (greater than 600 scholarly journals in the social sciences and humanities).

**Nexis Uni**<sup>®</sup> is almost always full text and covers approximately 11,000 sources of news, business, legal, medical, and reference publications. Incorporating information from newspapers or other current periodicals may supplement

academic sources. Another good source of news articles is ProQuest®, providing news information that ranges from the mid-18th century to the present. Statistics from newspapers or other sources may catch readers' interest, but always question the accuracy of the information and the credentials of the author. If possible, confirm the accuracy of the information by checking it against primary and/or academic sources. A **primary source** is a source presenting original material (e.g., journal article), whereas a **secondary source** provides descriptions, summaries, analysis, commentary, perspectives, evaluation, or conclusions about the primary source material. A textbook is considered a secondary source.

**Primary source:** An original source (e.g., data collected for the project or existing sources such as census data) that was created during a particular time period and is used to draw conclusions based on that research.

## The Web and Peer Review

Remember that a general Google search is an avenue to explore research topics and keywords, but there is no **peer review requirement** for the material you find on the Web. Across disciplines, most published journal articles undergo a peer review. In this process, a manuscript submitted for publication without its identifying information (e.g., no author's name or affiliation) is evaluated by other academics (i.e., reviewers) selected because they are knowledgeable about the topic. This process is supposed to lead to an unbiased evaluation of the article and ultimately to the publication of articles that are sound methodologically and contribute to the discipline. There is no "peer review" on the Web. For that reason, you have only your assessment of the work, which may not be sufficient to judge its quality. The topic of peer review is discussed in more depth later in the chapter.

**Secondary source:** A source that analyzes or critiques the primary sources. Textbooks, magazine articles or blogs summarizing research, systematic review articles, or handbooks on a topic are common secondary sources.

## Particular Kinds of Articles

Various types of research articles may be found, from those that provide overviews of a topic, such as review articles, to those that report primary research, where data have been collected. Another form of article, a meta-analysis, takes a statistical approach to combining the existing data from multiple studies on the same topic.

**Peer review:** Used in the context of academic work to indicate that a submitted work has been reviewed (usually anonymously) by experts knowledgeable in the field.

## Review Articles

**Review articles** provide an overview and brief history of the topic and current challenges. For that reason, such articles are useful as you begin to develop a research question. Often these articles are labeled "Annual Review of \_\_\_\_\_." Good sources of overview articles in psychology are *Psychological Bulletin* and the *Annual Review of Psychology*. Ask your reference librarian for publications that offer review articles in other areas of social science, such as sociology, human development, and anthropology.

**Review articles:** Provide an overview and brief history of a topic and its challenges.

## Meta-Analyses: Their Special Value

**Meta-analysis:** Meta-analysis is a “study of studies” that uses a statistical approach to synthesize the findings on a particular topic and to report the impact of a given intervention. That impact is reported as an effect size.

**Effect size:** Quantitative indication of the strength of a particular occurrence.

A **meta-analysis** is sometimes referred to as a study of other people’s studies or “an analysis of analyses” (Glass, 1976, p. 3). Another definition is the “Integration of the findings of several research studies by means of statistical techniques focusing on the same research question leading to meaningful quantitative data” (Corsini, 2002, p. 588). Results of meta-analyses combine the data from studies that are asking the same research question to produce a result that tells you how strong the impact of the variable of interest is. The result is reported as an **effect size**. An effect size is a quantitative indicator of the strength of a particular occurrence. For example, a company might be interested in having onsite parking at work and wants to know whether having an onsite parking garage is associated with lower absenteeism than having an offsite parking garage that requires using a shuttle bus to get to the office. If you were to conduct a meta-analysis on this issue, you would use appropriate search terms, in a comprehensive list of databases, to find research where onsite versus offsite parking was examined and one of the outcomes was a measurement of absenteeism. There are specific steps you would then take to combine the results of the studies you found numerically to determine the effect size.

One value of a meta-analysis is that it includes a systematic review of the relevant research by the authors. The research studies that were included to calculate the effect size are included in the published meta-analysis, giving you a solid list of references. When you look at a meta-analysis, you get a pretty good idea of the research conducted on this topic. But it is wise to remember another saying sometimes associated with meta-analyses: “garbage in–garbage out,” a phrase that appears to have originated in the computing world (<http://www.worldwidewords.org/qa/qa-gar1.htm>). What that phrase means is that the scientific rigor of the studies included in the meta-analysis is important. If the studies are not of high quality, then the outcome of the meta-analysis is questionable.

## How Journals Differ: Issues Related to Quality

**Impact factor:** Number that reflects the average number of times articles from a particular journal have been cited over a particular period of time (e.g., 2 years).

Journals differ from each other in many ways, from the number of issues they publish each year to their standards of acceptance and their **impact factor**, which is a number that reflects the average number of times articles from a specific journal have been cited over a particular period of time (e.g., 2 years or 5 years). This impact measure is considered by some to be a proxy for the importance of the journal. You can usually find the impact factor for a given journal on its home page. The *Journal Citation Reports (JCR)*, published by Thomson Reuters, lists journals and their associated impact factor. Access to this report requires a subscription, which your institution may have.

To understand better the differences in journal quality you might encounter, it might be helpful to contrast the scope and depth of the articles in such journals as *The Journal of College and University Student Housing* with those in such

periodicals as the *Journal of Personality and Social Psychology (JPSP)* or the *Journal of Applied Psychology*. Arguably these journals differ with regard to the sophistication and complexity of work each publishes. *JPSP* and the *Journal of Applied Psychology* are among the premier journals in psychology in terms of the quality of the articles, with high rejection rates, which some interpret as an indicator of quality. An article on the operation of journals published by the American Psychological Association in 2017 listed the rejection rate for the *Journal of Applied Psychology* at 88%, which was one of the highest for any of the APA journals listed; the *Journal of Educational Psychology* topped the list at 90% (<https://www.apa.org/pubs/journals/features/2016-statistics.pdf>).

The articles in *JPSP* and the *Journal of Applied Psychology* often contain a series of experiments, many participants, advanced kinds of analyses, and extramural funding. In contrast, *The Journal of College and University Student Housing* (published twice a year) typically contains research of more modest proportions, in terms of scope. The articles are often single studies of narrow scope with less advanced statistical analyses. A paper from the second issue of the 2015 publication of *The Journal of College and University Student Housing* illustrates these characterizations. “Is Three a Crowd? Exploring the Development and Satisfaction of Students in Triples” (Long & Kujawa, 2015) was conducted at one institution, focused on a fairly narrow topic, and used analysis of variance and chi-square as the primary statistical approaches. In contrast, a paper by Mann and Ferguson (2014), “Can We Undo Our First Impressions? The Role of Reinterpretation in Reversing Implicit Evaluations,” published in *JPSP*, presented seven experiments and was funded by grants from the National Institutes of Health (NIH) and a National Science Foundation (NSF) Graduate Research Fellowship award. The research used mediational analyses, as well as a mixed design (both between- and within-subjects factors; see Chapter 10).

Journals differ in the criteria used to determine research that is likely to be (a) accepted for review and (b) published in a particular journal. Nevertheless, it is worth remembering that journal impact is not synonymous with journal quality. Remembering Meltzoff’s (1998) comments about the importance of critical reading, mentioned in Chapter 1, every journal article needs to be approached with the attitude “show me.” We should not exhibit an overreliance on authorities, one

### Try This Now 2.3

Check out articles in a current journal in your discipline. Note differences in number of experiments, who the participants were, kinds of statistical analyses, sample size, and indication of grant support. In your discipline, what might be the equivalents of the *Journal of College and University Student Housing* and *JPSP*?

of the logical problems in thinking (Shermer, 1997) discussed in Chapter 1, and assume that a high rejection rate = high quality.

## Open Access and Predatory Publishers

**Open-access journals:** Journals that offer free access to the published articles.

In your search for articles you may come across those published in what are called **open-access journals**. Open Access publishing refers to “unrestricted access and unrestricted reuse” according to the definition on the PLOS website (<https://www.plos.org/open-access/>). PLOS publishes several highly respected open-access journals primarily in the sciences, but there are open-access journals in every scholarly discipline; for example, *Ergo* is an open-access journal in philosophy. In the summer of 2019, there were more than 13,000 open-access journals listed in the Directory of Open Access Journals (<https://doaj.org>). In principle, the movement toward open access should provide numerous benefits, including faster publication of articles and availability of information. Many (but not all) open-access articles follow a rigorous peer-review procedure, which means there is a kind of gate-keeping to try to ensure the quality of the publication. These journals are free to the reader, but there may be costs associated with the publication of these journals, many passed on to authors.

Not all open-access journals are created equal. Jeffrey Beall, who at the time was a tenured librarian at the University of Colorado, Denver, established a blog titled Scholarly Open Access; a cached version of this information, which provides a critical evaluation of open-access publishing, is currently available as “Beall’s List of Predatory Journals and Publishers” (<https://beallslist.net>). The site provides coverage from 2012–2017 and is updated in a separate section, which leaves Beall’s original list intact. Beall no longer maintains the list himself because of pressure he states he felt from his employer and fears for his job (Beall, 2017). The disclaimer section of the current website (now on an independent server) states that the site is currently maintained by a postdoctoral researcher in a European university (<https://beallslist.net/contact/>) who prefers to remain anonymous for reasons similar to those Beall mentioned.

**Beall’s List:** List evaluating open-access publications in terms of their standards; named after the originator of the list, Jeffrey Beall.

On his original site, Beall maintained a list of what he called Potential, Possible, or Probable Predatory Open-Access Publishers, often referred to as **Beall’s List**. Criteria for identifying predatory open-access publishers were also provided on Beall’s website and included such characteristics as evidence “showing that the editor and/or review board members do not possess academic expertise to reasonably qualify them to be publication gatekeepers in the journal’s field.” The cached version of Beall’s website contains a link to Beall’s criteria (<https://beallslist.weebly.com/uploads/3/0/9/5/30958339/criteria-2015.pdf>). This cached site also recommends consulting a website called Think.Check.Submit, the aim of which is to “educate researchers, promote integrity, and build trust in credible research and publications” (<https://thinkchecksubmit.org/>).

Frequently there are fees charged to authors to publish in these predatory journals (called the *author-pays model*); at one time, book publishers that charged authors to publish their books were called *vanity publishers*.

In 2011, Beall's list of Potential, Possible, or Probable Predatory Open-Access Publishers included 18 such publishers; in 2016, that number had reached 923. Beall had also started two new lists: one that included journals whose metrics (regarding calculation of impact factors) are suspect, the other identifying what he called hijacked journals, where the name of a legitimate journal has been hijacked by a counterfeit one.

It is probably prudent to stick with Google Scholar or one of your institution's databases, to decrease the probability that you will end up with an article from a journal on Beall's List. A useful overview of the problems surrounding open access publishing and the pressure to publish is an essay titled "Anarchy and Commercialism" by Altbach and Rapple (2012, March 8) from Inside HigherEd (<https://www.insidehighered.com/views/2012/03/08/essay-problems-state-journal-publishing>).

## Publication Practices of Journals

Most journals share criteria used in evaluating the merit of articles, including significance levels and the intellectual contribution of the article. Such criteria may be shared across journals, but journals obviously differ in the content of articles they publish; even within a given journal, editors in chief (who usually serve a specific length of time) may be interested in promoting a particular focus within the discipline. Furthermore, specialized journals are being added to address emerging fields, especially in technology.

### Significance Levels

In most research that uses inferential statistics (and most research in the social and behavioral sciences does), the aim of the project is to be able to reject the **null hypothesis** of no difference between sampled populations. This process is sometimes called the **null hypothesis significance testing procedure (NHSTP)**. As a scientific community, researchers therefore need a decision rule about when differences exist (that is, when to reject the null hypothesis represented by the data). Most members of the scientific community accept the standard of a statistical outcome with a probability value of .05 (5 / 100) or less frequent. The value .05, called the **alpha level**, represents the likelihood that in only 5 of 100 cases would the outcome occur by chance. This number is stated (acknowledged) before the analyses are conducted. This **p value** (or probability value) of .05 is the standard used by most journals for having significant results. In addition to the *p* value, it is common for journals to request that **confidence intervals** be provided.

**Null hypothesis:** Hypothesis that there are no group differences or relationships between variables.

**Null hypothesis significance testing procedure (NHSTP):** Using statistical inference, a procedure for evaluating whether the null hypothesis should be rejected.

**Alpha level:** Probability (usually set at .05) of incorrectly rejecting the null hypothesis.

**p value:** Probability value based on the characteristics of the observed data used for hypothesis testing.

**Confidence interval:** Shows range of values that you can be sure contains the population mean a certain percentage of the time (e.g., 95%).

For example, a 95% confidence interval shows the range of values within which you can be sure the population mean is contained 95 out of 100 times. Current standards for APA journals are “estimates of appropriate effect sizes and confidence intervals” as a minimum, according to the APA manual (2020, p. 87).

It should be noted that at least one journal (*Basic and Applied Social Psychology*) has banned the use of NHSTP in papers submitted to the journal. In its place, the journal editors call for:

Strong descriptive statistics, including effect sizes. We also encourage the presentation of frequency or distributional data when this is feasible. Finally, we encourage the use of larger sample sizes than is typical in much psychology research, because as the sample size increases, descriptive statistics become increasingly stable and sampling error is less of a problem. (Trafimow & Marks, 2015, p. 1)

Most journals are interested in publishing results that advance the literature in some way. For that reason, research in which the null hypothesis is accepted (i.e., not rejected) is unlikely to be published.

In the most recent edition of the *Publication Manual of the American Psychological Association* (2020), an entire chapter is devoted to journal article reporting standards (JARS), covering standards for quantitative, qualitative, and mixed methods (i.e., containing both quantitative and qualitative) research. Additional resources beyond that chapter are provided by the APA Style JARS website (<https://apastyle.apa.org/jars>).

## Reviewer Selection

When a journal states that it is a peer-reviewed journal, what that means is that people knowledgeable about the topic in question have been invited by the journal editor to evaluate the quality of the paper. Usually a journal specifies particular categories for comment, including the currency and coverage of the literature, as represented in the introduction, the theoretical grounding, the scope of the research question, methodological issues (e.g., sample size and adequacy of measures), appropriateness of statistical approach, significance of findings, and contribution of the study to the literature (answering the “what’s new and noteworthy here?” question).

Journal editors are increasingly aware that fraud occurs in the reviewer process (e.g., authors create false e-mail addresses for reviewers and suggest these fictitious reviewers provide a review—essentially generating the reviews for their own manuscripts). In one instance, a reputable journal retracted 60 published articles after it was determined that there was author and reviewer fraud (<https://www.sagepub.com/en-us/nam/press/sage-statement-on-journal-of-vibration-and-control>). Many journals subscribe to the **Committee on Publication Ethics (COPE)** for reviewers. The guidelines are available on the COPE website: <http://publicationethics.org/resources/guidelines>.

**Committee on  
Publication  
Ethics (COPE):**  
Sets standards  
for editors and  
reviewers who  
evaluate research.

In addition to what one would normally expect of a reviewer (e.g., expertise in the subject area and agreement to keep the manuscript and review details confidential), providing fair reviews involves degrees of separation. The reviewer should not have collaborated with the author (usually there is a time frame, for example, 3 years), be at the author's institution, or in other ways be familiar with the manuscript that is being reviewed.

## Intellectual Contribution of the Article

Large numbers of manuscripts are submitted for publication review, and few can be accepted for publication (e.g., the rejection rate for the *Journal of Personality and Social Psychology* was 87% in 2017). The statistics provided by the APA indicated that 1,051 manuscripts were submitted to that journal in 2017. Given the number of submissions, research must be more than methodologically sound and well written; research must make a contribution and advance the state of knowledge in a meaningful way. The extent of the contribution and whether the research is of sufficient scope or merit is a subjective decision, which is why the expertise and fair-mindedness of the peer reviewers is important.

With the recent work of the *Reproducibility Project* (see Chapter 1), which is determining whether the published findings of 100 correlational and experimental studies in psychology are reproducible, journals may be more welcoming of replications than in the past. Because replications (for the most part) have not been judged to advance the field, there has been a bias against publishing replications to this point.

## Editorial Policy

As suggested in their titles, journals are interested in publishing work about a specific area of interest (e.g., *Health Environments Research & Design Journal*, *Cultural Sociology*, and *Attachment and Human Development*). Editors generally serve for a particular period of time (e.g., 3 years) and may have a specific focus they want to emphasize during their tenure. For example, for Ronald Brown, the outgoing editor of *Professional Psychology: Research and Practice*, the focus of the journal was on “publishing research that could increase access to mental health treatments” (<http://www.apa.org/pubs/journals/pro/>).

## Specialized Journals

As knowledge expands, new journals are introduced to provide a home for those topics, whether related to technology (e.g., *Digital Applications in Archaeology and Cultural Heritage*, begun in 2014); mental health (*Spirituality in Clinical Practice*, begun in 2013); or demographic groups that have been underrepresented in the literature (e.g., *Asian American Journal of Psychology*, begun in 2009).

When you are considering where to submit research for publication, it is important to select a journal that is a good “fit” for your research. Often you can



make an informed judgment by looking at your references and assessing where most of the research you cite has been published. It makes sense to submit your manuscript to a journal you have cited! Editors will often “desk reject” a manuscript they judge to be a poor fit for their journal (e.g., as evidenced by a lack of citations to that journal). A desk reject means that the manuscript is not sent out for review.

## File Drawer Phenomenon

Earlier we talked about the difficulty in having an article accepted for publication, with one of the basic criteria being research where the null hypothesis has been rejected. Not all research works out, and then it may be “filed away.” This problem with nonsignificant results being filed away contributes to what is known as the **file drawer phenomenon or effect**, a term introduced by Robert Rosenthal in 1979 in his article “The ‘File Drawer Problem’ and Tolerance for Null Results.” This problem is a form of publication bias, in which nonsignificant results do not contribute to the body of knowledge about a particular issue and are therefore not published. When this happens, particular findings appear to be more robust or reliable than in fact they are, given the unpublished data that remain “in the drawer,” so to speak.

At the other end of the file drawer spectrum, a problem may occur when data produce significant results *unwanted* by the researcher (e.g., supporting the work of another theorist). If this researcher then decides to “file” the data, the case is problematic. Not only do we have less information about a research topic, but there is also a kind of academic dishonesty in not sharing significant findings inconsistent with one’s predictions or theoretical model.

**File drawer phenomenon or effect:** Form of publication bias in which research appears more reliable than it is because articles on the topic that have not rejected the null hypothesis have not been published.

## Journal Articles Versus Book Chapters

Overall, the primary mode of advancing knowledge in the social and behavioral sciences is the journal article, and in particular the peer-reviewed journal article, as was discussed earlier. Journal articles have the advantage of a short “time to market” because it takes much less time to publish an article than a book; this is even more likely to be the case with the availability of electronic journals. Furthermore, although books may be peer reviewed, that is less likely the case than for journal articles. In addition, even though books may present original research (i.e., be considered *primary source* material), they are more likely to synthesize existing research (i.e., be considered *secondary source* material), especially in the case of edited volumes. For those reasons, journal articles are likely to be the major source of information that you include in the Introduction of a research project.

## Revisit and Respond 2.3

- What do the number of experiments and sophistication of data analyses suggest about an article?
- What is Beall's List?
- When we talk about the publication practices of a journal, what do we mean?
- Why do reviewers need ethical standards?
- State the null hypothesis in your own words.
- Why might replications become more common in the future?
- What is the file drawer phenomenon?

## Physically Obtaining an Article: A Closer Look at Databases

Earlier in the chapter, the presented material covered keywords and narrowing or broadening your search to identify a manageable number of articles to consult. Now more depth about electronic resources will be provided and guidance about *physically obtaining* those articles.



A lot of browsing is done “online” using electronic resources (E-resources). It is important to know how to obtain the physical copies of the resources about your topic. Your library homepage will probably contain links to a Catalogue (to find books), Electronic Resources such as Databases and Indexes (to find journals), and Online Journals (full text). Databases and indexes are typically used to *locate* an article of interest. Online journals provide articles (although not necessarily for all dates of publication) in downloadable form.


Once you have located an article of interest through a database or index, you want to determine whether the article is immediately downloadable from a journal with online access (from the library's collection of online journals). In databases like PsycINFO, the user enters a keyword and selects several fields (“Select a Field”) such as author name, journal where the article appears, publication date, or a combination of these fields to locate a relevant article. The next question is how to obtain that article. This process usually involves your library's electronic journal holdings. For a given article you have located, there is usually an option to check for “full text” (see Figure 2.8).

Some articles are linked directly to the database citation via a linking tool with a symbol that states “PDF full text” (see Figure 2.9). Compare Figures 2.8 and 2.9.

When the PDF Full Text symbol and/or the HTML Full Text symbols are present (see Figure 2.9), just click on one of these links and your article will appear.

Figure 2.8 Screenshot of a Library's Electronic Journal Holdings for a Specific Article With Option to Check for Full Text

3. **Urban design aesthetics: The evaluative qualities of building exteriors.**  

 Academic Journal

Nasar, Jack L.; Environment and Behavior, Vol 26(3), May, 1994 Special Issue: **Design** review: Public participation in the evaluation of **design**. pp. 377-401. Publisher: Sage Publications; [Journal Article]

**Subjects:** Aesthetic Preferences; Architecture; Emotional Responses; Evaluation; **Urban Planning**

Times Cited in this Database: (35)

[Check for Full Text](#)

Source: PsycINFO®.

Figure 2.9 Screenshot of a Library's Electronic Journal Holdings for a Specific Article With Option to Download PDF or HTML Full Text

1. **Impressions of psychotherapists' offices.**  

 Academic Journal

Nasar, Jack L.; Devlin, Ann Sloan; Journal of Counseling Psychology, Vol 58(3), Jul, 2011 pp. 310-320. Publisher: American Psychological Association; [Journal Article]

**Subjects:** Aesthetic Preferences; Aesthetics; Personalization; **Psychotherapists**; Therapeutic Environment; Adulthood (18 yrs & older); Male; Female

Cited References: (61) Times Cited in this Database: (6)

 [HTML Full Text](#)  [PDF Full Text](#)

Source: PsycINFO.

PDF full text is preferred because the article will have the visual appearance of the actual article (e.g., with the correct page numbers and all figures). The HTML version is computer generated, and not all figures or images may appear; in addition, the formatting is not identical to the actual article, making it difficult to identify original page numbers if you want to quote from the article. If the symbols are not present (see Figure 2.8), you typically click on the link that says, “Check for Full text.” This link will either provide options for obtaining the article (e.g., “Content is available via the following links” and these will be listed to click on) or you will see a statement something like: “Sorry, no holdings were found for this journal. Please see additional options below for finding this journal.” The additional option will typically be requesting the item through [interlibrary loan](#) (see Figure 2.10). Interlibrary loan is a system that allows library patrons to request library materials not held by their institution. Librarians carefully select the combination of databases they offer (pay for) to give library patrons the greatest coverage, but they can't provide every resource. Interlibrary loan allows users to obtain needed materials through other libraries.

**Interlibrary loan:** System that allows library patrons to request library materials not held by their institution.

## Figure 2.10 Screenshot of Interlibrary Loan Request for a Specific Article Not Available at Current Library

### Search criteria:

[Refine or alter criteria](#)

Fisher, Bonnie (05/01/1995). "Fear spots in relation to microlevel physical cues: Exploring the overlooked." *The Journal of research in crime and delinquency* (0022-4278), 32 (2), p. 214.

Citation: Email ▾ Or Export/Save ▾

**Sorry, no holdings were found for this journal.**

**Please see additional options below for finding this journal.**

### Additional options:

#### Interlibrary Loan

[Submit a request](#)

Source: PsycINFO.

## PsycINFO Versus PsycARTICLES

Students may prefer to search for articles using the database **PsycARTICLES** because *every* article in that database is provided full text. The articles come from journals published by the APA and affiliated publishers. In contrast, articles identified through PsycINFO may provide full text but not necessarily. There is a distinct advantage to PsycINFO, however, because PsycINFO contains abstracts from more than 2,200 journals, many more than provided by PsycARTICLES. By using PsycINFO, you have access to a much greater breadth of information about a particular topic. In other words, potentially having to search a bit longer to obtain a full text version of an article is worth the effort in terms of becoming familiar with the published work on a topic.

**PsycARTICLES:**  
Database of articles from the American Psychological Association.

## Revisit and Respond 2.4

- Explain how you would obtain an article that is not available as full text downloadable.
- What is the difference between PDF Full Text and HTML Full Text?
- What is the difference in journal coverage between PsycINFO and PsycARTICLES?

## Summary of the Article Locator Search Process

Start with a solid database in your field, such as PsycINFO, locate articles of interest, and *then* see whether those articles are linked directly to full text or available through full text holdings supported by your institution. If not, request the

article through your library's version of interlibrary loan. Although it may be easier to limit yourself to electronic journal sources to obtain articles directly (i.e., full text downloadable), the shortest path does not necessarily guarantee that you will secure the most important articles.

## Interlibrary Loan (ILL) Systems and World Catalog (WorldCat)

You need to be familiar with the manner in which your library obtains materials (typically books and journal articles) that it *neither owns nor to which it has direct access*. As was discussed, these materials can be obtained through some kind of interlibrary loan system. Many libraries offer an interlibrary loan Web interface called ILLiad to request books and journal articles. You typically need to set up your own ILL (interlibrary loan) account (check with your librarian).

**WorldCat** (World Catalog) is another useful resource to obtain materials not available in your library. As the name "world" suggests, this database is worldwide; it includes books, monographs, videos, and sound recordings. Most library systems have a link to WorldCat as one of their databases. A book entry in WorldCat will tell you whether your library owns the item, what institutions in your state own it (including public libraries), and who owns the item beyond your state.

**WorldCat:**  
Worldwide catalog listing books, monographs, videos, and sound recordings; useful for determining what institution owns a resource in order to retrieve it.

### Try This Now 2.4

In WorldCat, search for a book whose title you know and see whether it is in your library's holdings; if not, what library close to you owns the book?

## What to Do With Your Articles (Read More Than the Abstract!)

If you develop a research idea by only reading abstracts, the quality of your research project will suffer. An Abstract of 250 or fewer words does not provide sufficient detail to make decisions related to your project. You need to read beyond the Abstract to determine the paper's true relevance to your idea. You may find it useful to start with the Method and Discussion sections before reading the other sections of the paper. Many of the important details come in the section that describes

how the research was done, known as the **Method** section. This section includes the “who” (the participants and their number), the “what” (the measures/equipment), and the “how” (the procedure). You can quickly see the nature and scope of the undertaking and consider its relevance to your circumstances (in terms of participants, measures, and/or equipment). The **Discussion** reports whether the hypotheses were supported, connects the findings to the literature on the topic, acknowledges limitations, and gives some ideas for future directions. The description of the limitations and presentation of future directions both may help shape your research idea.

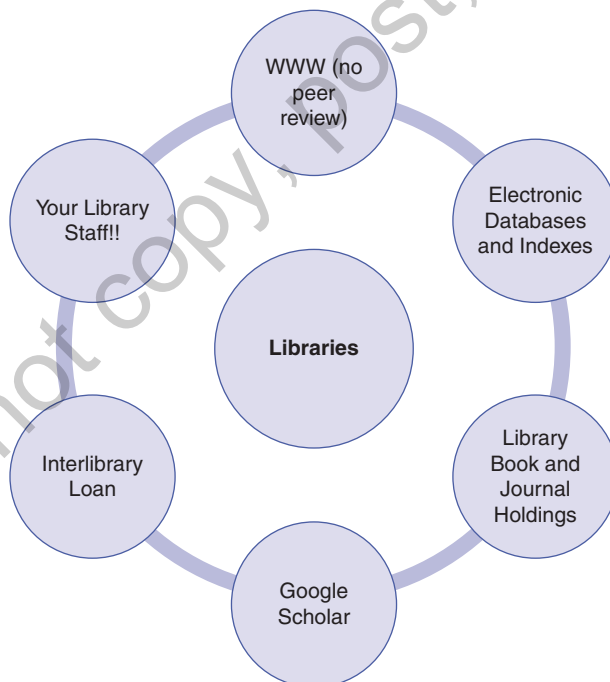
How many articles do you need to read? There is no firm number, but in reading between 20 and 30 articles, you will become increasingly familiar with the topic and will begin to see the same articles cited again and again. When this happens, you have begun to identify the important publications in the field; these should serve as a foundation for your work.

Many articles you read will follow APA publication style. If that is the case, the articles will be divided into (a) a review of the literature, (b) a method section (with subsections dealing with participants, measures, and procedure), (c) the

**Method:** Heading in American Psychological Association (APA) research paper in which you present your Participants, Materials/Measures/Instruments, and Procedure.

**Discussion:** Title of section in a manuscript when you interpret the results, centered and bolded in American Psychological Association (APA) style.

Figure 2.11 Overview of Connections to Resources Available Through Your Library



Source: Adapted from Devlin (2006), p. 29, Figure 1.3.

findings (Results), and (d) the meaning of the work (Discussion). The section heading labels may differ somewhat depending on the nature of the research consulted (e.g., quantitative, qualitative, mixed methods).

## The Introduction

**Introduction:** Part of a manuscript that introduces the topic, reviews relevant literature, and ends with hypotheses.

**Tree backward:** Search technique for working backward through previously published work to obtain resources.

**Tree forward:** search technique looking forward to see what more recent articles have cited the article of interest.

The **Introduction** is usually shaped like a funnel, starting out broadly with some general comments about the area of interest, then gradually tapering to focus on particular variables, and finally narrowing to the specific hypotheses, which are usually stated at the end of the introduction (more aspects of writing will be covered in Chapter 13). In the presentation of the literature, which names (key players) and theories appear repeatedly? Are there different “camps” representing conflicting theoretical orientations? Work that is cited repeatedly is sometimes called seminal or keystone. Look out for these studies because they may have historical, methodological, or theoretical importance. Two techniques, **tree backward** and **tree forward** (Martin, 2007, pp. 125–126), help you canvas the literature to make sure you have identified the important work. When you tree backward, you identify a citation in the article you are reading that looks promising (often on the basis of what was said about it in the article), and then go to THAT article to examine its references. You continue to do this, working backward in time from the most recent to the earliest articles. If you *tree forward*, you see which other (more recent) authors have cited the article you are currently reading. To tree forward, you use a database like the Social Sciences Citation Index or the “cited by” functions of PsycINFO or Scopus.

## The Hypotheses

The statement of *hypotheses* (see definition in Chapter 1) typically comes at the end of the Introduction. The statement of hypotheses is important; if well stated, with specific predictions, a clear statement of hypotheses makes conducting the analyses straightforward. This sounds easier to do than it is. Even in exploratory correlational research where the investigator wants to look at the relationship of one situation to another, without an intervention, a statement of hypotheses would help guide the research effort. What is it that you really want to know? An interest in type of student housing and sense of community could be turned into an explicit statement with a hypothesis such as:

Students living in triples converted from doubles will report a lower sense of community than will students living in nonconverted doubles.

In the Introduction, note which hypotheses have been supported in the literature and where conflicts have occurred because this will highlight areas where work remains to be done (to resolve the conflicts). Other research opportunities

are highlighted when authors mention a recent surge in research activity on a given topic after a period without much activity. For example, just a few studies on residence halls were done each year from the late 1960s to the late 1990s, at which time interest in the topic grew (refer to Figure 2.7). Why? Were new residence halls being constructed, which in turn led to the opportunity for field research? Your own experience with student housing would be a good place to start to consider the impact of a variety of student housing arrangements (e.g., campus apartments vs. high-rise residence halls).

## The Method Section

The **Method** section of articles you read is particularly important because novice researchers often struggle with the “who” (the participants), the “what” (the measures), and the “how” (the specific steps) in a research project. Following APA style, the Method section is divided into subsections involving participants, materials or measures (also called instruments), and procedure. Pay attention to the particular approach that is used in a given area of study. What is the typical approach: Observation? Interviews? Self-report surveys? Is the research correlational (no manipulation of variables), is there experimental manipulation, or a combination? You might try an approach to the research question different from the one typically used.

### Participants

One of the biggest challenges is obtaining the “Who” for the study. Often the **participants**, the *who*, will be college students, recruited at the researcher’s institution (see also Chapter 11 on recruiting participants). In the articles you read, notice whether the participants were college students. Adult volunteers from the community? A special population like residents of an assisted-living complex?

Sample size is an important consideration. How many people participated? If participants number more than 100, this might be an issue at small institutions where the participant pool is limited (see Chapter 11). If a topic requires a specialized population, such as prisoners, this is also a consideration. Certain groups such as prisoners and children are considered **vulnerable populations**. Not only may such populations be difficult to obtain, as in the case of inmates, but also research with vulnerable populations requires special ethics review (see Chapter 4).

How were the participants recruited? Through a participant pool (i.e., usually students who chose to participate in research for extra credit in a course)? Were they contacted via e-mail? Direct mailing? Via **Amazon MTurk** (or Amazon Mechanical Turk), a crowdsourcing platform sponsored by Amazon.com where researchers (requesters) post studies and participants (workers) complete the

**Method:** Heading in American Psychological Association (APA) research paper in which you present your Participants, Materials/Measures/Instruments, and Procedure.

**Participants:** Section of your Method in which you describe the “who” of your study.

**Vulnerable populations:** Populations (e.g., children, prisoners, or those with impaired decision-making ability) for whom a full institutional review board (IRB) review is typically required for research involving these individuals.

**Amazon MTurk:** Online paid crowdsourcing platform to acquire participants.

**Convenience sample:** Participants gathered through their mere availability and accessibility to the researcher.



**Snowball sample:** Nonprobability sample in which individuals who participate in a study invite others to participate in the study, and they in turn invite still others.

posted tasks for pay (see Chapter 11)? Were the participants randomly selected within the population or through a **convenience sample**, gathered through their mere availability and accessibility to the researcher (e.g., people who stopped at a research table in the library or student union; the participant pool)? It is worth noting that the participant pool is a convenience sample and is not necessarily representative of the student population. Did the authors use a **snowball sample** (i.e., asking people to participate who in turn asked others to participate)? Issues of sampling are covered in Chapter 11.

**Materials:** Section of the Method in which you describe the “with what” of your study; often called measures, instruments, or apparatus.

## Materials/Measures/Instruments

Finding appropriate **materials** or **measures** (see Chapter 5 on qualities of measures) is among the biggest challenges for researchers. The first step is identifying what measures might be appropriate. As was true for identifying seminal articles, keep track of the scales and measures used repeatedly in a given area. For example, if you are interested in the topic of self-esteem, you will repeatedly see citations to Morris Rosenberg’s Self-Esteem Scale (1965). This scale has a high **internal consistency** (in the neighborhood of .88), which means the items relate to each other (i.e., are measuring the same concept). In addition, there are only 10 items, which is a consideration in terms of the number of items you may ask respondents to complete.

**Measures:** In the Method section where you describe the scales or instruments used.

**Internal consistency:** Statistical measure, usually expressed as Cronbach’s alpha, which reflects the degree to which each item of the measure is tapping the construct of interest.

## Procedure

What precisely did participants do? The level of detail in this section should enable you to replicate the study or the **procedure**. Consider the time involved in collecting the data—were there individual interviews? Group administration? Online questionnaire administration? Was there equipment? Were there costs involved? (Payment for copyrighted questionnaires? Payment to participants? Incentives such as a lottery?) In addition to these considerations, are you qualified to administer a given test (usually this applies to clinical measures)? A description of required qualifications is typically stated in the description of the measure. More in-depth coverage of Measures appears in Chapter 5.

**Procedure:** Section of your Method in which you describe the *how* of your study.

## The Results Section

Look at the presentation of the **Results** section (sometimes called findings in qualitative research); could you understand the statistics? Are sophisticated approaches, such as structural equation modeling, being used in this area of research? Could you see yourself doing statistical analyses of this complexity? Note the structure of the Results section. What information is presented first? How are tables and figures used?

## The Discussion Section: Conflicts and Gaps

Like the introduction, the **Discussion** provides direction about research possibilities. The Discussion section is shaped like a triangle, starting narrowly (at the top of the triangle), restating whether the hypotheses were supported. Then it broadens to relate the findings of the research to the work cited in the Introduction. The Discussion typically ends with a section on Limitations and Future Directions. If the work is applied, there also may be a specific section called Recommendations or Implications for Practice.

The Discussion section provides material to consider for research projects. When authors are relating their work to the existing literature, they talk about their findings being consistent (or not) with this literature. If not, then conflict exists. This conflict provides the opportunity to conduct further research to try to resolve the discrepancies. Limitations are a fruitful area to direct future research because the authors point out the shortcomings of their work; you can try to address these shortcomings, such as better measures or a more heterogeneous population. Returning now to an idea from Michael Shermer (1997) in Chapter 1, overreliance on authorities, don't be afraid to criticize research that has been published. Beyond the limitations identified by the authors themselves, you may identify other drawbacks to the work; these provide the opportunity for new research projects.

Future Directions also point to research opportunities. Researchers may not be explicit about the directions the research could take, to protect their own "next steps." At the same time, they may speak in more general terms about possibilities, such as using different age groups or more current measures.

The seventh edition of the *APA Publication Manual* contains tables that specify standards for reporting Quantitative (Table 3.1), Qualitative (Table 3.2), and Mixed Methods (Table 3.3) research for all sections of a manuscript (Abstract, Introduction, Method, Results, and Discussion). These tables not only provide a roadmap for researchers to make sure they include all of the expected information

**Results:** Title of the section in a manuscript where the results are presented; in American Psychological Association (APA) style, the word Results is centered and bolded.

**Discussion:** Title of section in a manuscript when you interpret the results, centered and bolded in American Psychological Association (APA) style.

### Revisit and Respond 2.5

- Explain what information you should keep track of in each of the following sections: Introduction, Method, Results, and Discussion.
- What are the three sections of the Method?
- What is the internal consistency of a measure?
- What is the shape of the Introduction? The Discussion?
- Why are the Limitations and Future Directions sections important in developing research ideas?

in their manuscript, but they are also helpful in the planning stages of the research to make sure the necessary steps are taken to obtain the expected information (e.g., types of recruitment, length, and follow-up; transcription processes used for qualitative data).

## Keeping Track: ILL, Mendeley, and RefWorks

Interlibrary loan (ILL) books typically must be returned to a lending library within two to three weeks. Your own handwriting may not provide an accurate record of material in these books. Instead, if you are using quotations from books, photocopy the pages from which you are quoting; having these pages will enable you to check the accuracy of the quotations you use.

**Mendeley** and RefWorks may be useful to the researcher but for different reasons. Mendeley is a free reference manager, and you can easily download and install it on your computer. Returning to our theme of tradition and innovation, Mendeley involves working on “tradition.” It is easy to be overwhelmed with articles you have accessed, and unless you print out the articles (which would be expensive), you need a way to retrieve these articles without redoing your database searches. Once you have downloaded a full text article to your desktop, you can add it to your Mendeley library, which you can organize by topic headings. You can then retrieve your articles from your Mendeley reference manager by author name, author keywords, publication, or your own tags. Within Mendeley you can create folders for specific topics, which is especially helpful if you are writing something that covers a range of topics or working on more than one project. If you use quotations in your writing, it is wise to recheck those quotations before submitting a manuscript. Using Mendeley, you can easily access the full text paper against which to check the quotation.

RefWorks is primarily used by students as a bibliographic management tool. Most students in the social and behavioral sciences will be asked to learn APA style (2020) for providing citations and references. APA style is challenging to learn because there are many rules that deal with such issues as the use of ampersands, commas, italics, volume and issue numbers, and digital object identifiers. To make it more challenging, in APA style, the format of citations in the text is different from the bibliographic form in the References section. Unlike Mendeley, there is a cost to RefWorks, but institutions typically have purchased a license to the

**Mendeley: Free reference manager for organizing and subsequently accessing downloaded articles.**

### Try This Now 2.5

If you do not have Mendeley on your desktop, consider downloading and installing it.

software, and users logged on to the institutional system can use RefWorks free of charge. In theory, using RefWorks should create error-free bibliographic citations and references. Trying this on the Andrade and Devlin (2015) article, the citation was close but not error-free.

Andrade, C. C., & Devlin, A. S. (2015). Stress reduction in the hospital room: Applying Ulrich's theory of supportive design. *Journal of Environmental Psychology, 41*, 125–134. doi:10.1016/j.jenvp.2014.12.001

Can you detect the error? Try This Now before reading further.

The “U” in Ulrich (a proper name) was not capitalized in the RefWorks version. In addition, users of APA style need to know what fonts and font sizes are recommended (choices include both sans serif options such as Calibri in 11 point and serif fonts such as Times New Roman in 12 point). See Section 2.19 of the APA manual (2020) for a complete list of options. Importantly, use the same font for text throughout your paper! Further, APA style (Section 9.35) recommends that authors follow the International DOI Foundation formatting, which is <https://doi.org/xxxxx> (where “xxxxx” refers to the DOI number, which starts with “10”). The advice in this book is that you learn APA style well enough to detect these kinds of errors.

## Confounding or Third Variables: Refining the Research Question and Closing the Research Gap

Even when we ask questions that seem to have a high likelihood of producing strong relationships, they may not. Why? The gap between the variables of interest may be wide; as a result, other variables or factors that have not been measured may be better explanations of the relationship than those we have included. An **extraneous variable** is one that exists in the context of the study but is not being measured. There may be hundreds of extraneous variables for any given study, such as the time of day the study is taken, the age of the experimenter, the class year of the participants, or the weather outside. Extraneous variables are not automatically a problem. The real issue is whether these variables could provide an alternative explanation for your results. In an experiment when an extraneous variable changes systematically with the variables you are studying, it becomes what is known as a confounding variable (also called a **third variable**, usually in the context of correlation) (see also Chapters 3 and 7). Confounding variables are those the researcher failed to measure or control that provide alternative explanations for the relationship between the variables of interest. Here is an example. A college asks a researcher to test the impact of replacing mattresses in the residence halls on students' self-reported quality of sleep. The students are randomly assigned to residence halls (a good start), but there is only enough money to replace half the mattresses, and the Facilities Department at the college

### Extraneous variable:

A typically unwanted variable that exists in the context of the study but is not being measured.

### Third variable:

Variable that influences the relationship between the variables of interest; also called a confounding variable.

has decided to replace them only in one contiguous area of campus (“south” campus) because it will make the installation process easier. The mattresses in north campus residence halls will remain the same for the year. As it turns out, north campus residence halls are near a major traffic artery, and noise from the highway is audible. Can you see the problem here? The location of the installation (south vs. north campus) systematically varies with the new vs. old condition of the mattresses. Therefore, location is a confounding variable. If the self-reported quality of sleep is better for students in south vs. north campus, you can’t rule out the possibility that it is the noise level rather than the mattress quality that makes the difference. In the case of the mattresses, random distribution of the new mattresses across both south and north campus would help to disentangle the issue of noise, and location would be included as a variable in the analysis (see Chapter 3 for a discussion of independent and quasi-independent variables).

It would be impossible to measure every extraneous variable to avoid the issue of a confounding or third variable. Instead, the researcher needs to measure “the likely suspects,” and/or otherwise control for them in the research design. The likely suspects are typically those the literature suggests might be related to the variables being studied. In addition, the researcher’s observations of aspects of the situation (e.g., the location of the highway in our mattress example) are important.

As another example, would you predict a strong relationship between job performance and employee job satisfaction? Most of us would because we imagine that people who are satisfied with their jobs are productive. Yet the relationship between performance and job satisfaction is relatively small (Iaffaldano & Muchinsky, 1985). Thinking about this relationship more deeply, many factors are associated with why people are productive in their jobs, not just job satisfaction.

There are many reasons: benefits (including health care); status; no other job prospects; and commuting time. Thus, pressures, concerns, or other unmeasured variables may influence the relationship between job productivity and worker satisfaction, and if these variables are systematically related to the variables of interest (here job performance and employee job satisfaction), we have a problem with a confounding relationship. For example, one likely candidate that may systematically vary with job performance and job satisfaction is the amount of independence to make decisions on the job that a worker has. Another might be the satisfaction a worker has with life at home (which could spill over to work). Thus, several explanations exist for any relationship. These other variables are a problem

## Try This Now 2.6

What reasons might people have for being productive at work and for keeping their jobs?

in research. We want to rule out as many of these as we can by taking steps *before* we collect data. We do so by (a) refining the research question and closing the research gap and/or (b) accounting for potentially confounding variables in the design of our study.

When the variables under study in a relationship are somewhat broadly defined (e.g., satisfaction with participation in athletics and student academic achievement), many other variables may be potential candidates in explaining that relationship. You want to limit or control for the number of other variables that may explain the relationship in question, without limiting the research question to the point that it has no **external validity** (see Chapter 3) or application beyond the particular situation examined.

In the example of the relationship between satisfaction with athletic participation and student academic achievement, there are a number of factors that may be connected to both of these variables. One may be the relationship with the coach; another may be whether participation involves an individual or team sport; a third may be the demands of a given sport (e.g., some sports are single season; other sports cut across seasons; others, such as sailing, have heavy travel schedules). Narrowing the research question to focus on a more specific variable or set of variables may enable the researcher to better rule out alternative explanations for the relationship. Here, the relationship with the coach may be a good candidate because a coach might serve as a mentor for both athletics and academics. Such research might help us better understand the role coaches play in the lives of student-athletes and their academic success, beyond what could be learned by asking about general satisfaction with athletic participation, because general satisfaction is a broad construct that itself includes many components.

To close the research gap even further, it might be prudent to tailor the research question to focus both variables on athletics, for example, examining the relationship with the coach and the satisfaction with participation in college athletics. Thus, one way to refine the research question is to target variables where a strong argument can be made about the logic of the relationship. As R. Kaplan (1996) has noted, the project needs to be “about something—not everything” (p. 172).

One of the most challenging aspects of doing a research methods project is the pressure of time and the problem of developing a sound research idea. While the scale of projects done in research methods courses tends to be small, there are aspects of the process that cannot be short-changed, whatever the scale. One of these is conceptualization, or the idea that is being tested. As R. Kaplan (1996) stated, “The single most damaging problem in attempts to do small experiments stems from devoting too little effort to thinking about what one hopes to learn. Conceptualization is probably the most ignored, most essential aspect of doing a successful small experiment” (p. 172). One good question Kaplan recommends that you keep asking yourself as your idea develops is “What [do] you want to be able to say when you are done?” (p. 172).

But in addition to closing the research gap, there may be other relevant variables you need to assess. By including background or **demographic variables**

**External validity:** Ability to apply the results of research more broadly, that is, beyond the sample used in a particular study. Generalizability is a major emphasis of external validity.

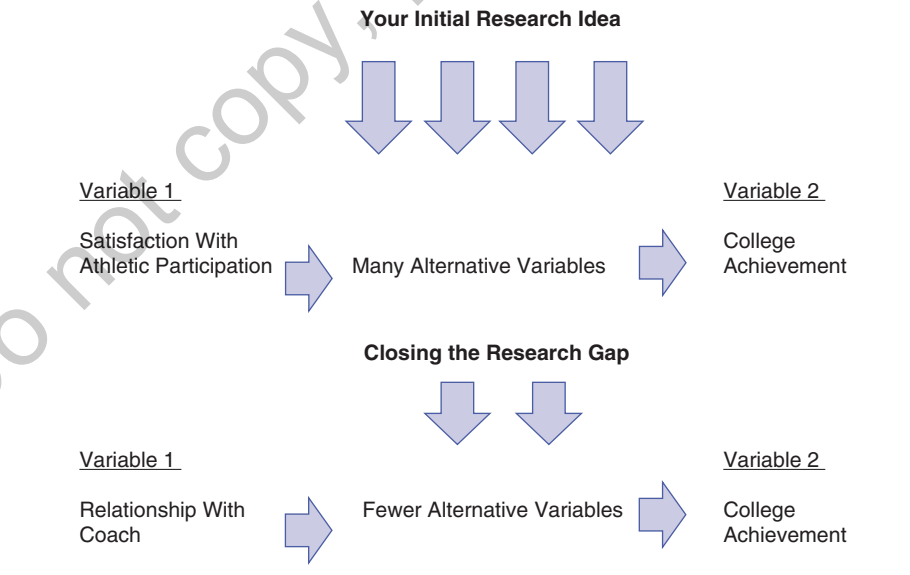
**Demographic variables:** Background variables (e.g., gender or age) about participants that are used to describe the sample and may be used in analyses in quasi-experimental research.

describing the participants (e.g., high school GPA, gender, or class year), you will reduce the number of relevant unmeasured variables. You cannot include an endless list of demographic questions; be mindful of the “likely suspects.” Select those variables from the literature most likely to be relevant (and that you thus need to measure; see Figure 2.12). In our example involving the relationship with the coach and student achievement (or satisfaction with athletics), it would seem prudent to ask about such relevant background variables as the student’s major and whether the student was a recruited athlete.

## Revisit and Respond 2.6

- Explain what a third variable is and why it makes sense to narrow the research gap.
- What role do demographic variables play in narrowing the research gap?
- Where should you look to determine which demographic variables to include?

Figure 2.12 Diagram Illustrating the Idea of Closing the Research Gap



## Time Pressure and Timelines

Whatever the length of time you have to complete a research project, start the process by creating a timeline of due dates for components of the project: coming up with ideas, consulting the literature, settling on an approach (research design), identifying and obtaining measures, securing IRB approval, recruiting participants, collecting the data, entering and/or analyzing the data, presenting the results, and explaining the results. As explained earlier in the chapter, the written report (manuscript) includes the Introduction, Method (participants, measures, procedure), Results, and Discussion. Given time pressure, it is a wise idea to write sections along the way, rather than wait until after you analyze your data.

Divide the semester (12–13 weeks) into weekly segments; then work backward from the final deadline. If your instructor reads drafts, incorporate that into your timeline. Figure 2.13 provides one model to manage the steps in the research process.

Figure 2.13 Steps for Managing the Research Process

Sample Timeline	
Week 1	Begin generating ideas
Week 2	Begin to consult the literature; access/order articles and books
Week 3	Settle on an idea and refine it; continue accessing/ordering articles and books; determine your research approach (i.e., correlational vs. experimental)
Week 4	Locate and obtain measures; develop questionnaire either online (e.g., Survey Monkey® or Qualtrics) or paper version; generate IRB proposal (which includes the full survey with all the measures that will be used in the study; begin draft of Introduction)
Week 5	Submit IRB proposal; continue writing Introduction; write References
Week 6	Receive approval of IRB proposal; revise and resubmit to IRB if necessary
Week 7	Collect data
Week 8	Finish collecting data; write Method section (in past tense)
Week 9	Score, enter, or download data; analyze data
Week 10	Write Results section and begin Discussion
Week 11	Finish Discussion section and produce a draft
Week 12	Submit draft (if professor agrees)
Week 13	Receive draft comments, revise, and submit final paper; present research to peers (e.g., PowerPoint)

*Source:* Adapted from Devlin, A. S. (2006). *Research methods: Planning, conducting, and presenting research*. Belmont, CA.: Wadsworth/Thomson.



## 2.2

- What is the Library of Congress classification system?
- What is a keyword?
- What kinds of resources would you expect to find in the Reference section?
- In what ways can librarians help with your research project?

## 2.3

- What do the number of experiments and sophistication of data analyses suggest about an article?
- What is Beall's List?
- When we talk about the publication practices of a journal, what do we mean?
- Why do reviewers need ethical standards?
- State the null hypothesis in your own words.
- Why might replications become more common in the future?
- What is the file drawer phenomenon?

## 2.4

- Explain how you would obtain an article that is not available as full text downloadable.
- What is the difference between PDF Full Text and HTML Full Text?
- What is the difference in journal coverage between PsycINFO and PsycARTICLES?

## 2.5

- Explain what information you should keep track of in each of the following sections: Introduction, Method, Results, and Discussion.
- What are the three sections of the Method?
- What is the internal consistency of a measure?
- What is the shape of the Introduction? The Discussion?
- Why are the Limitations and Future Directions sections important to develop research ideas?

## 2.6

- Explain what a third variable is and why it makes sense to narrow the research gap.
- What role do demographic variables play in narrowing the research gap?
- Where should you look to determine which demographic variables to include?

## PRACTICE QUIZ

- In a true experiment, independent variables are manipulated by the researcher.  
True  
False
- Research involving sensitive topics and vulnerable populations does not require approval from the IRB.  
True  
False
- Sally hates the design of her cafeteria because she thinks it keeps people from talking to each other and making new friends. If she conducts a study to test what design would produce the most social atmosphere, she is likely accomplishing which of the following?
  - Basic research
  - Applied research
  - Reliability
  - Validity
- Which of the following should students *not* rely on for a credible source?
  - Unpublished doctoral dissertations
  - Conference presentations
  - Undergraduate journals
  - Web blogs
- Which of the following sources might help you find keywords for terms in your field?
  - Library of Congress Classification System
  - Thesaurus of Psychological Index Terms*
  - Encyclopedia of Psychology*
  - Measures for Clinical Practice*
- Which of the following is not an example of a keyword?
  - Attribution
  - Daniel Corsini
  - Despite
  - Technical reports
- A keyword that yields zero hits may be too narrow.  
True  
False
- Which of the following allows you to see how many other times a particular article has been cited in a particular database?
  - Times Cited in this Database by PsycINFO
  - Tracking Citation system in ERIC
  - BibMe
  - RefWorks
- In \_\_\_\_\_, the researcher is looking at people at different points of development, but collects the data at one point of time.
  - cross-sectional design
  - longitudinal design
  - time lag design
  - sequential design
- In a correlational study, the researcher manipulates the independent variable.  
True  
False

11. The IRB is an international committee that oversees research involving human participants.  
True  
False
12. Which of the following is *not* crucial for selecting a reviewer for a project?  
a. Years of experience in a field  
b. Expertise in the subject area  
c. Agreement to keep the manuscript and review details confidential  
d. Degrees of separation from the author
13. The file drawer phenomenon includes research not submitted for publication whether that's due to no significant results or significant results the researcher doesn't like.  
True  
False
14. The abstract of an article contains all of the important information in the article.  
True  
False
15. The description of the participants in a study, the materials used, and the procedure are all found in the Method section.  
True  
False
16. A meta-analysis is a powerful source of information about a topic because it combines data from other studies examining the same research question.  
True  
False
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---

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    - (d) Consider how other researchers explain the manner in which they are building on the previous literature—that is, taking things further and in new directions.

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## Time Pressure and Timelines

Whatever the length of time you have to complete a research project, start the process by creating a timeline of due dates for components of the project: coming up with ideas, consulting the literature, settling on an approach (research design), identifying and obtaining measures, securing IRB approval, recruiting participants, collecting the data, entering and/or analyzing the data, presenting the results, and explaining the results. As explained earlier in the chapter, the written report (manuscript) includes the Introduction, Method (participants, measures, procedure), Results, and Discussion. Given time pressure, it is a wise idea to write sections along the way, rather than wait until after you analyze your data.

Divide the semester (12–13 weeks) into weekly segments; then work backward from the final deadline. If your instructor reads drafts, incorporate that into your timeline. Figure 2.13 provides one model to manage the steps in the research process.

Figure 2.13 Steps for Managing the Research Process

Sample Timeline	
Week 1	Begin generating ideas
Week 2	Begin to consult the literature; access/order articles and books
Week 3	Settle on an idea and refine it; continue accessing/ordering articles and books; determine your research approach (i.e., correlational vs. experimental)
Week 4	Locate and obtain measures; develop questionnaire either online (e.g., Survey Monkey® or Qualtrics) or paper version; generate IRB proposal (which includes the full survey with all the measures that will be used in the study; begin draft of Introduction)
Week 5	Submit IRB proposal; continue writing Introduction; write References
Week 6	Receive approval of IRB proposal; revise and resubmit to IRB if necessary
Week 7	Collect data
Week 8	Finish collecting data; write Method section (in past tense)
Week 9	Score, enter, or download data; analyze data
Week 10	Write Results section and begin Discussion
Week 11	Finish Discussion section and produce a draft
Week 12	Submit draft (if professor agrees)
Week 13	Receive draft comments, revise, and submit final paper; present research to peers (e.g., PowerPoint)

*Source:* Adapted from Devlin, A. S. (2006). *Research methods: Planning, conducting, and presenting research*. Belmont, CA.: Wadsworth/Thomson.

You can control your own behavior, but receiving approval from the IRB or feedback on your draft may not happen according to schedule. Manage the time for the activities *you* can control (generating ideas, consulting the literature, writing sections of the manuscript). One other challenge is worth noting. One of the biggest obstacles is obtaining complete measures (with all items and scoring instructions), which is not as straightforward as you might think. The pitfalls of this task will be covered in Chapter 5.

## Academic Fraud and Steps Toward Transparency

**Fraud:** Deception designed to result in personal gain; may take many forms in the research process.

**Fraud** is purposeful deception to achieve some kind of gain, financial or otherwise. When people talk about fraud in research, they generally refer to manipulation of some part of the research endeavor. The University of Virginia has a useful website listing forms of academic fraud. These include plagiarism, multiple submission, false citation, false data, and Internet resources (<https://honor.virginia.edu/academic-fraud>).

In this book, a focus is on aspects of the research process where academic dishonesty may occur. You may be familiar with the phrase “ignorance of the law is no excuse,” which essentially means that if you violate standards of conduct, not knowing the “rules” does not excuse the behavior.

Examples of fraud in the academic process have already been discussed, most notably, the fabrication of a dataset by a graduate student (see Chapter 1). Why does such behavior occur? There are many reasons why people take these costly shortcuts, among them being extrinsically rather than intrinsically motivated (Davy et al., 2007). There is some indication that fraud (data fabrication or falsification) is more prevalent in journals with higher impact factors, suggesting that authors purposely seek to advance their standing with these publications (Steen, 2011a). Research by Steen (2011b) also has suggested that research misconduct is increasing and that journals do not always inform their readership of the reasons for the retraction of papers. More than 30% of the retracted papers unearthed in Steen’s analysis were not so identified. Some authors have argued that motivations for power and achievement, labeled *neoliberal values of self-enhancement*, may explain cheating in higher education (Pulfrey & Butera, 2013).

There are a number of ways in which the integrity of the research process is currently being addressed. One approach is to increase the transparency of research data, by asking submitting authors to make their raw data available in a research data repository that could be available to reviewers, for example, or eventually publically available. A second approach, and its own kind of transparency, is to publicize papers that have been retracted, for which an expression of concern has been posted, or for which a corrigendum (a correction)

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has been posted. The website Retraction Watch, which is sponsored by the Center for Scientific Integrity, is one such website (<https://retractionwatch.com/>).

In the work of students in my research methods classes, the incidence of student misconduct has been quite low. When it occurs, it usually involves plagiarism or collaborating on assignments without permission. Fabrication of an entire dataset is at one extreme of academic dishonesty; unintended plagiarism may be at the other. Because plagiarism typically involves the process of writing, the specifics about what it is and how to avoid it are covered in Chapter 13, dealing with writing up and presenting your results.

## Summary

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At this point, you should have thought of a research idea and examined what has already been done in that area. By now you know the physical holdings and electronic resources your institution's library has, how the interlibrary loan system works (make sure you have created your own account), how to search for journal articles through several different databases, and how to request articles that you cannot immediately download.

An important idea in this chapter is the critical task of narrowing the gap between some variable of interest, such as participation in college athletics, and its relationship to an outcome, such as college achievement. Your job is to eliminate competing variables by narrowing the research question sufficiently to rule out the most likely alternative explanations for any significant relationship that emerges. You cannot control every variable that may play a role, but you can certainly pose your research question in a way that reduces the likelihood that one of those competing variables provides a better explanation than your candidate.

This chapter presented a timeline that you may find useful in planning the work of the semester. Staying on top of your deadlines will also reduce the likelihood that you will engage in academic dishonesty.

If you have not had time to consider them earlier, here is the list of **Revisit and Respond** questions from this chapter.

### 2.1

- Why might it make sense to think of some ideas before consulting the literature?
- What advantages are there to using your own personal experience to develop research ideas?
- Write down two potential research ideas that come out of your personal experience and two that come from the Internet.



## 2.2

- What is the Library of Congress classification system?
- What is a keyword?
- What kinds of resources would you expect to find in the Reference section?
- In what ways can librarians help with your research project?

## 2.3

- What do the number of experiments and sophistication of data analyses suggest about an article?
- What is Beall's List?
- When we talk about the publication practices of a journal, what do we mean?
- Why do reviewers need ethical standards?
- State the null hypothesis in your own words.
- Why might replications become more common in the future?
- What is the file drawer phenomenon?

## 2.4

- Explain how you would obtain an article that is not available as full text downloadable.
- What is the difference between PDF Full Text and HTML Full Text?
- What is the difference in journal coverage between PsycINFO and PsycARTICLES?

## 2.5

- Explain what information you should keep track of in each of the following sections: Introduction, Method, Results, and Discussion.
- What are the three sections of the Method?
- What is the internal consistency of a measure?
- What is the shape of the Introduction? The Discussion?
- Why are the Limitations and Future Directions sections important to develop research ideas?

## 2.6

- Explain what a third variable is and why it makes sense to narrow the research gap.
- What role do demographic variables play in narrowing the research gap?
- Where should you look to determine which demographic variables to include?

## PRACTICE QUIZ

- In a true experiment, independent variables are manipulated by the researcher.  
True  
False
- Research involving sensitive topics and vulnerable populations does not require approval from the IRB.  
True  
False
- Sally hates the design of her cafeteria because she thinks it keeps people from talking to each other and making new friends. If she conducts a study to test what design would produce the most social atmosphere, she is likely accomplishing which of the following?
  - Basic research
  - Applied research
  - Reliability
  - Validity
- Which of the following should students *not* rely on for a credible source?
  - Unpublished doctoral dissertations
  - Conference presentations
  - Undergraduate journals
  - Web blogs
- Which of the following sources might help you find keywords for terms in your field?
  - Library of Congress Classification System
  - Thesaurus of Psychological Index Terms*
  - Encyclopedia of Psychology*
  - Measures for Clinical Practice*
- Which of the following is not an example of a keyword?
  - Attribution
  - Daniel Corsini
  - Despite
  - Technical reports
- A keyword that yields zero hits may be too narrow.  
True  
False
- Which of the following allows you to see how many other times a particular article has been cited in a particular database?
  - Times Cited in this Database by PsycINFO
  - Tracking Citation system in ERIC
  - BibMe
  - RefWorks
- In \_\_\_\_\_, the researcher is looking at people at different points of development, but collects the data at one point of time.
  - cross-sectional design
  - longitudinal design
  - time lag design
  - sequential design
- In a correlational study, the researcher manipulates the independent variable.  
True  
False

11. The IRB is an international committee that oversees research involving human participants.  
True  
False
12. Which of the following is *not* crucial for selecting a reviewer for a project?  
a. Years of experience in a field  
b. Expertise in the subject area  
c. Agreement to keep the manuscript and review details confidential  
d. Degrees of separation from the author
13. The file drawer phenomenon includes research not submitted for publication whether that's due to no significant results or significant results the researcher doesn't like.  
True  
False
14. The abstract of an article contains all of the important information in the article.  
True  
False
15. The description of the participants in a study, the materials used, and the procedure are all found in the Method section.  
True  
False
16. A meta-analysis is a powerful source of information about a topic because it combines data from other studies examining the same research question.  
True  
False
17. A variable that provides alternative explanations for the relationships being studied and that the researcher failed to measure or control is called a(n):  
a. pilot variable  
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