BIBLIOGRAPHIC RESEARCH

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Reading, understanding, and reviewing prior work on your research topic are critical steps in the research process. The work that people have already reported will lay the foundation for your research by helping to describe what is known and unknown. Previously published work will also help to identify gaps in research and areas of controversy.

Prior chapters have discussed the planning of your research (Chapter 1) as well as selecting and refining your topic (Chapter 2). It is especially important to understand your topic clearly, define its major points, and narrow it sufficiently to permit a successful review of the literature. Succeeding chapters will discuss critical evaluation of sources (Chapter 4) and writing your paper (Chapters 23–26). This chapter provides an overview of bibliographic research: the process of using the library and bibliographic resources to locate information relevant to your topic.

Our primary purpose in writing this chapter is to help you locate information on your topic. We begin with the types of sources you might consult and how each will be useful in your search process. Second, we discuss both the methods of access to bibliographic sources (databases and indexes) that will help you locate research reports and the search process itself. The chapter closes with some suggestions for recording and organizing the information you discover.

Sources

This section describes types of sources that may be found in the personal (materials within your personal possession), institutional (materials available through your college or university library), or virtual library (materials available anywhere). For each type of source, we describe the purpose and format (what it is), how it is used in research, its typical location (personal vs. institutional vs. virtual library) and provide examples. For additional information, extensive listings of sources, and specific examples of how to use particular tools not included here, refer to Baxter (1993), McIlvani (1982), Reed and Baxter (2003), or Sternberg (2003). In this chapter, we will focus on the field of industrial and organizational (I/O) psychology to provide examples of sources.

Textbooks

Purpose and Format

Textbooks perform an instructional function and are organized to support an educational program. Introductory textbooks provide a broad overview of a field such as industrial and organizational psychology (e.g., Landy & Conte, 2004; Levy, 2003; Muchinsky, 2003). They summarize key principles, theories, research
findings, and trends in the field. Intermediate and advanced textbooks provide more detailed treatment of a subfield, such as work motivation (e.g., Porter, Bigley, & Steers, 2003).

Use in Research

Every good textbook should refer to key sources related to the topics it covers. Thus a textbook may provide an entry into the literature of the field. Recognize, however, that a textbook is a secondary source, summarizing and reporting the work of others. Despite the advantage of providing a summary and overview of a field, the risk is always that as a secondary source, a textbook may misinterpret, oversimplify, or ignore research findings.

Location

Most professionals maintain a small collection of introductory textbooks in their personal library pertaining to each area of significant interest, as well as a larger collection of advanced textbooks relating to their areas of specialization. Although libraries tend not to acquire textbooks, focusing instead on primary sources, most institutional libraries have one or several textbooks on major topics of interest. The reference department of your college or university library, or the virtual library, should be able to provide information about most textbooks.

Monographs

Purpose and Format

In every field, there are book-length sources that go beyond the textbook. They communicate the results of original research and therefore make a unique contribution to a field. In time, some become classic works in the field with which every practitioner in that field is expected to be familiar. Some of these classic works become the textbooks of graduate courses and have an impact on the work of future generations of psychologists, as the examples below illustrate.

Use in Research

To the extent that classic monographs provide critical new approaches to a field, they become primary sources and furnish a starting point for further investigation. Several examples follow: Campbell, Dunnette, Lawler, and Wick (1970) stimulated numerous studies on managers. The work of Katz and Kahn (1966) on organizations as systems stimulated the thinking of subsequent organizational psychologists. March and Simon’s (1958) work is recognized as a point of departure for many subsequent works on organizational theory, structure, and conflict. Work by Kahneman, Slovic, and Tversky (1982) on judgment and heuristics provided the foundation for later work on judgment and decision making.

Location

As in the case of the advanced textbook, practitioners tend to have several key classic monographs in their personal library. Because some seminal works are out of print and difficult to obtain, they may be available only in the institutional library or in some cases must be accessed through the virtual library.

Handbooks

Purpose and Format

At intervals, persons decide (and publishers agree) to prepare a comprehensive reference work that summarizes a field. At the time it is published, a handbook provides a comprehensive assessment of the state of the art in a particular field, including theory, research, methodology, and issues. This is typically offered as a multichapter handbook with numerous contributors, each a specialist or expert in his or her particular chapter topic.

Use in Research

A handbook chapter provides an overview of a topic; it usually also offers an extensive bibliography of important sources in that area. It can be an excellent starting point for further investigation. In addition, a handbook will point to key variables that have been investigated, and the absence of a chapter in a handbook may indicate areas lacking in extensive research.
The Handbook of Industrial and Organizational Psychology (Dunnette, 1976) was considered an important statement of the state of the art at the time of its publication. Many professionals in the field acquired copies for their personal libraries. Many graduate students used it as a key source in work on advanced degrees. Some professors even viewed it as a textbook for graduate students. The subsequent four-volume second edition updated and expanded the original, making it even more valuable in the personal professional library (Dunnette & Hough, 1990–1994). The more recent handbook by Anderson (2001–2002) provides an update in some areas of the field. Because we all have limits on our finances, we might rely on the college or university library for related or more specialized handbooks such as Bass and Stogdill’s Handbook of Leadership (Bass, 1990) or the Handbook of Leadership Development (McCauley & Van Velsor, 2004). The virtual library provides information about, and access to, additional handbooks.

Annual Reviews

Purpose and Format

Reviews present selective and evaluative review of the status and recent progress in main areas of the field. Volumes such as the Annual Review of Psychology, published each year since 1950, follow a master plan for regular review of topics in the field. Some topics, including those in which there are especially active research programs, receive more frequent review chapters.

Use in Research

Each Annual Review of Psychology volume contains about 20 chapters and each is authored by an expert on the field covered. Each chapter includes an extensive reference list, providing a good starting point for many research projects. An advantage of a review is that such compendia may be issued annually and provide updates more frequently than handbooks. Some areas within psychology are supported by more specialized reviews.

Location

Some academic professionals receive each volume in an annual series to ensure awareness of work such as that of O’Reilly (1991). Many larger institutional libraries include complete sets of volumes of annual reviews. In addition, some reviews such as the Annual Review of Psychology are also available online to subscribing libraries. A very specialized source, particular to I/O, is the International Review of Industrial and Organizational Psychology, an annual publication first issued in 1986, which provides authoritative reviews of topics in the field (Cooper & Robertson, 1986+). You may have to rely on the virtual library for more specialized review monographs.

Professional Directories

Purpose and Format

These sources provide brief biographical information on individuals, including current address, workplace, and educational background. There are numerous directories, and most associations maintain a directory of their members (e.g., the American Psychological Association [APA] Directory).

Use in Research

Directories can both facilitate communication among researchers by providing location information and indicate a researcher’s background by listing credentials of biographees.

Location

A benefit of membership in most associations is a membership directory. Many psychologists will have directories in their personal library for associations of which they are members. Institutional libraries may carry directories of major national organizations (e.g., the APA Membership Directory) but will not own all directories of all associations. Many institutional libraries tend to focus on nondisciplinary directories of distinguished individuals, for example, Who’s Who in America. The virtual library expands the scope and reach of printed directories. Many academic institutions make
their campus directories, telephone books, and electronic mail directories available for remote searching on the Internet. Some provide in-depth information about the ongoing research in their departments. In addition, more faculty and researchers maintain their own Web pages that include a list of current publications, areas of current research interests, and conference papers presented. If copyright restrictions permit, some researchers provide copies of unpublished papers, presentations, and data sets for downloading. Such information is helpful if you want to review a researcher’s work in progress or contact someone whose research interests closely parallel your own.

**Journals**

*Purpose and Format*

Most published research in psychology appears as articles in journals. There are hundreds of journals of interest to psychologists. The field of industrial, organizational, and engineering psychology has dozens of potentially relevant journals focused on the interests of the practitioners in particular areas. The most reputable journals are refereed; that is, articles accepted for publication undergo a review process such as described in Part V.

*Use in Research*

The thorough, competent researcher conducts a careful, retrospective search of previously published work in his or her area of interest while defining the scope of a research project and before beginning the data collection phase. This is done to benefit from the findings of other researchers, to ensure that relevant variables are being addressed, to relate the proposed project to relevant trends in the field, and to determine that the proposed project makes a unique contribution (unless the intent is to replicate a particular study).

*Location*

Most psychologists subscribe to a few key journals for their personal library that represent their primary interests (e.g., *Journal of Applied Psychology*). The institutional library will contain a larger collection of potentially relevant journals (e.g., *Organizational Behavior and Human Decision Processes*) as well as journals covering closely related disciplines (e.g., *American Management Review*). Institutional libraries, like individuals, have limited budgets to acquire all journals needed for their users, especially those that are more specialized (e.g., *Organizational Dynamics*). Thus the researcher may need to tap the virtual library through methods such as interlibrary loan for full coverage of a topic. Since the early 1990s, an increasing number of refereed journals are beginning to appear in electronic form. As a result, your institution may have access to many electronic journals through joint purchasing agreements with other universities or by subscribing to indexing services that also provide the full text of articles, as described below.

**Abstracts and Indexes**

*Purpose and Format*

Most indexing and abstracting tools provide author, title, and subject access to articles within journals. Some more specialized sources index published conference papers and proceedings, book chapters, dissertations and master’s theses, federal and state publications, and technical reports. Although they can be in a printed publication or an electronic searchable format, some are available only in an electronic format.

Although most indexes began as printed volumes (published on a monthly or quarterly basis), the significant ones are now searchable as bibliographic databases. Not only are they updated more frequently, they permit more flexible search strategies; for example, the ability to search for words in the title or an accompanying abstract. Some database producers provide a link from a bibliographic citation to the full text of an article. When libraries subscribe to indexes that supply articles as well, they can increase the scope of journals they provide to their own researchers.

*Use in Research*

Indexes and abstracts provide coverage of thousands of journal titles and access to articles in many languages. Their breadth of coverage
brings publications to the attention of researchers who might not otherwise have the time or money to peruse very specialized journals or those in disciplines tangential to their own. A significant function that they provide is retrospective bibliographic searching, the ability to search the journal literature in a field to locate important, relevant sources, even if local institutional libraries do not own all the publications indexed.

Location

Until the 1980s, many psychologists relied either on the printed Psychological Abstracts to conduct searches of the literature or on the services of a librarian to perform a computer search of the PsycINFO database. Increasingly, availability of this information in electronic formats using relatively easy search software means that researchers can initiate their own computer searches and, in many cases, do so from offices or homes. Some government-sponsored databases, such as ERIC and Medline, can be searched from publicly accessible Web sites. Some databases have the ability to link from a citation to the full text of an article, although the availability of this feature varies widely from one database to another or among individual campuses.

Dissertations and Theses

Purpose and Format

A requirement of almost all scholarly doctoral programs (e.g., PhD) and of many research-oriented master's programs is the completion of a thesis or dissertation. The dissertation or thesis is expected to be an original piece of research in the discipline that demonstrates one's knowledge of the literature in an area, ability to use appropriate methods and tools in conducting research, and skill in communicating and defending the content and merits of the research contribution to the field.

Use in Research

Because dissertations or theses contain an extensive review of relevant literature, they can be useful in identifying prior research. Because most research raises new questions as well as answers prior questions, a dissertation or thesis can provide ideas for future research. Reviewing completed dissertations or theses can provide guidance in completing one's own project.

Location

Academic programs typically require the degree candidate to file a copy of the dissertation or thesis in the college or university library. In the case of doctoral dissertations, most universities also require that a copy be submitted to University Microfilms International (UMI). UMI makes an archival microfilm copy of each dissertation received, announces its availability in the Dissertation Abstracts International (or the electronic Dissertation Abstracts Online), and sells copies of dissertations to individuals and institutions.

Conference Papers

Purpose and Format

Presentations at conferences take many forms, including reports of research, symposia or discussions, and invited addresses. Researchers often use the conference paper to provide the earliest public report of the most recent results of their research program.

Use in Research

Conference papers may contain important findings of research, significant new theoretical approaches, or reflections on the progress in a field. Symposia may provide a discussion of several alternative theoretical approaches or data from different studies on the same topic.

Location

Some conferences issue a proceedings book that contains the text of presentations, but these are not formal publications, and the papers are more often represented by abstracts. Formal publication of conference proceedings as a journal article, special journal issue, or book chapter is rare. Many conference papers never appear in print within the journal literature of a field for a variety of reasons; for example, they are not
submitted for publication by their authors or are not accepted for journal publication. A small number of authors submit their conference papers to a service that accepts unpublished manuscripts, such as ERIC’s Resources in Education. But many conference papers never find their way into an indexing or abstracting database; they become part of what is known as the “fugitive literature” in psychology. Unless you search the programs of conferences of the APA, American Psychological Society, Psychonomic Society, Midwestern Psychological Association, Society for Industrial and Organizational Psychology, and many others (most of which are not indexed by PsycINFO), you will not know about an important paper. Some authors have begun to provide copies of their presentations for download from their Web sites, especially if they do not plan to publish them.

Research Reports

Purpose and Format

Research reports provide results of a research project conducted by a center or institute. These reports on ongoing projects of research funded by a grant or foundation. The reports themselves are often issued by the sponsoring research institute or research center as part of a series of publications.

Use in Research

Because they provide reports of research, they may provide valuable data and conclusions. They may be a preliminary report, which might appear later in a slightly different format as a published article or a conference presentation, or simply the results of a funded study, so that the written product will be the only one produced.

Location

They are often unpublished; they have not been through any type of peer review process and do not appear in a journal, nor are they likely to be indexed in bibliographic databases. As in the case of the conference paper, research reports are difficult to identify, locate, and acquire, making them part of the fugitive literature. Some research centers or institutes provide copies through their Web sites.

Government Documents

Purpose and Format

Government documents are publications issued by federal, state, local, and international organizations. Governmental agencies issue statistical reports, annual reports on their programs, regularly appearing magazines, and reports on special topics. Governmental agencies issue thousands of publications each year; one of the largest publishers in the world is the U.S. Government Printing Office. These publications may be on any topic in which a governmental body has an interest, for example, hearings of a U.S. Senate subcommittee on mental health and aging, a publication by the Administration for Children and Families reporting national statistics on mistreatment of children, an OSHA standard on safety with video display terminals, or the quarterly Schizophrenia Bulletin, published since 1969 by the U.S. Center for Studies of Schizophrenia.

Use in Research

Depending on your research topic, a governmental publication may have a great deal or little to offer. It may contain statistical summaries, public opinion or policy positions, or information on government programs. Some areas, especially more applied fields such as educational and applied psychology, are more likely to be the focus of government publications than others.

Location

Many of these publications are available in hardcopy as well as in microform, and some are available electronically. Thousands of documents are acquired each year by hundreds of government depository libraries in each state across the country. Many are available for sale from the Superintendent of Documents or a Government Printing Office bookstore. Increasingly, such publications are available electronically on the Internet.
Access to federal government publications is available through the Catalog of U.S. Government Publications (CGP). This service is available online through the GPO Access Web site at www.gpoaccess.gov and indexes federal government publications starting in 1994.

State government publications are handled separately by each entity. As of this writing, documents issued by some states, such as Missouri, Nebraska, New Jersey, and Washington, can be located online by using a Web index to that state's publications. States generate a wide variety of publication formats (reports, legislative hearings, statistical publications, and data sets) reflecting varying levels of peer review and scrutiny from the research community.

Data Archive

Purpose and Format

Data archives exist to collect and preserve data that are made available to researchers. Archives tend to specialize in particular topics or disciplines, for example, longitudinal or qualitative studies and public opinion surveys.

Use in Research

As with government documents, availability and utility of data archives for your research will depend on your subdiscipline and research topic. You are much more likely to find a relevant data archive on topics in applied areas. Data archives are becoming increasingly important as researchers find the cost of collecting or acquiring data prohibitive. Additionally, researchers are seeing increasing value in sharing data with other laboratories to compare findings. Large data repositories, such as the Inter-university Consortium for Political and Social Research and the Economic and Social Data Service (University of Essex), collect, process, and distribute public use data for use by researchers.

Location

Some, such as the National Data Archive on Child Abuse and Neglect, are maintained by a university (the Family Life Development Center in the College of Human Ecology at Cornell University, Ithaca, NY). Others are maintained by government entities, such as the U.S. Bureau of Labor Statistics, a Division of the U.S. Department of Labor, the primary federal government data collection body for information on labor economics. For additional information, consult Chapter 22 on use of archival data sets, and Chapter 21 on conducting a meta-analysis.

Web Site

Purpose and Format

It is probable that almost every reader of this chapter has used the Internet and has visited many Web sites. Web sites provide information in an electronic form that is available on the Internet. They are made available in many ways: by professional organizations (e.g., APA), by publishers of electronic materials (e.g., Elsevier Science), by consultants wishing to advertise their services, and by individuals who wish to offer information to the public or to make a statement.

Web sites have a number of advantages. They can be very current. Some offer information that is not provided elsewhere (it is unique). Web sites can be accessed at almost any time.

They also have a number of potential disadvantages. There is no mechanism that controls what information can be offered on a Web site. Although some are very reliable and authoritative, others promote a particular social or political agenda and may contain information that is either strongly biased or just downright incorrect.

You must use information gained from a Web site with care. Beck (1997), Kirk (1996), and others have offered a variety of criteria you should use in evaluating Web sites. Among the most important are the following:

- Authority—Who is responsible for the information contained in the Web site, and is this a reliable source?
- Accuracy—Is the information accurate, and can it be verified?
- Objectivity—Is the information relatively free of bias, or is there a clear political, social, economic, or commercial agenda underlying the message?
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- Currency—is the information still available and up to date?
- Coverage—is this site a duplicate of something available in print or elsewhere, or is the information uniquely available here?

Use information contained in Web sites with care. Although some are excellent sources of information, others are not. You must always use good judgment when evaluating information, and this is especially important when investigating Web-based material.

Use in Research

Web sites are varied and numerous. Established publishers are making more of their products available electronically (e.g., materials to support publishers’ textbooks and electronic versions of printed magazines). These trends make it hard to generalize, but on the Web you may find data, scholarly articles, reviews, and other information that will assist your research project.

Location

What can we say other than, hop on the Internet with your favorite Web browser. Again, be cautious as you search. Web browsers differ in their capabilities. Our favorites today are metasearch engines (e.g., MetaCrawler) and Web spiders (e.g., Google). See Gowan and Spanbauer (2001) for more information.

In summary, sources such as textbooks, handbooks, and reviews can be useful in defining and narrowing your research topic (see Chapter 1 of this volume for details). Abstracts and indexes enable you to perform a thorough retrospective literature search, which we have discussed. Much of the advice contained in Chapter 4 on evaluating manuscripts will be useful as you evaluate the papers, articles, reports, and other materials identified in your search.

Access to Sources

Over the past 30 years, access to information has changed radically. In 1975, if you wanted research information (e.g., an article, book, or research report), you had to get that information in the form of a physical document. Your options were few. You could own the material yourself in your personal library. You could rely on the resources of your college, university, or local public library. Or you could make use of interlibrary loan (if it was available to you) to get what you needed from another library. Often what you needed was either difficult to locate, because the print indexes were difficult and cumbersome to search, or took weeks to acquire from other libraries through interlibrary loan.

Many researchers still rely heavily on their personal library and the resources of their college or university library. The increasing cost of journal subscriptions and the expanding array of potentially relevant publications, however, make local availability of all relevant resources increasingly challenging.

The advent of the digital age and advances in technology have opened vast new avenues leading to information resources. The virtual library, “all the stuff out there,” can consist of library resources, databases, and electronic archives, wherever they are. Many libraries now provide their catalog of monographic materials (books) in an electronic form that is searchable through a Web browser interface. State library resources (e.g., WISCAT) and national resources (e.g., Library of Congress) are available to be searched online, and agreements among libraries to share resources can make access to these materials easier for researchers.

Bibliographic databases and indexes to journals, research reports, and technical reports, once only available in print form are now available electronically. Many of these materials are available through computer interfaces to libraries and subscribers. Your college or university library subscribes to a variety of abstracting and indexing services that provide electronic access to their databases, and these are described in more detail below. An increasing number of journals are becoming available in an electronic form—either as an Adobe portable document format (pdf) image of the article or as a hypertext markup language (HTML) file of the article. One important example is JSTOR, an electronic archive of hundreds of scholarly journals that focuses on historical, retrospective coverage.
The implication of this is that you can locate information that resides in a library or database in another part of the globe by using the computer in your home.

In the next section, we will describe some of these key indexing and abstracting tools. Then we will briefly discuss information available on the Internet. Last, we will address the search process itself, that is, how to most effectively use these sources.

Bibliographic Databases

Databases that index the content of journals, books, and other publication formats are the most efficient way to conduct a comprehensive literature search. There are a large number of abstracting and indexing services. Some provide very specific coverage, such as Child Development Abstracts or Social Work Abstracts. Others provide information on the contents of thousands of journals and books within one discipline and related disciplines. Among these broader indexes, five titles are the most germane to psychology. These are PsycINFO (also published as the printed Psychological Abstracts), ERIC, Sociological Abstracts, Business Source Elite/Premier, and Medline (also published as Index Medicus).

PsycINFO

Produced by the APA, the PsycINFO database indexes the contents of about 1,900 journal titles from all fields of psychology as well as related disciplines such as sociology, medicine, management, and education. In addition, it indexes books and book chapters, dissertations, and research reports. The coverage afforded by PsycINFO is unique in several respects: its international coverage of the research literature; the retrospective indexing, with some entries dating back to the 1880s; and the detail with which entries are analyzed. From 1967 forward, most entries contain lengthy abstracts and have detailed subject indexing based on the Thesaurus of Psychological Index Terms—which is regularly revised—and other standardized terms such as age group, grade level, language and country of publication, and species. Cited references attached to articles, books, and chapters were added to entries in 2002, with some cited references added retrospectively to 1988. Although a rich source of information on published literature, its long publication history and evolving indexing strategies since it was first produced in 1967 necessitate a well-prepared search strategy before using the database. A careful review of PsycINFO coverage and indexing approaches is necessary if you plan to conduct a literature review spanning decades.

ERIC

Begun in 1966 under the auspices of the U.S. Department of Education’s Educational Resources Information Center, this database is composed of two types of indexing. One is to the journal literature of education and related disciplines, and ERIC currently indexes approximately 980 such titles. (The journal index component is also published as the printed index, Current Index to Journals in Education.) The second component consists of an index to research reports, conference papers, curriculum guides, and other unpublished material. This function is published as the printed Resources in Education (formerly Research in Education). The database’s structure is similar to PsycINFO, in that entries provide nonevaluative abstracts and extensive indexing based on a controlled vocabulary, which is revised regularly (Thesaurus of ERIC Descriptors). In addition, most of the unpublished reports indexed are also reproduced and distributed by ERIC. In the past, such documents were distributed in microfiche to about 800 libraries and information centers in the United States and sold directly to individuals on a cost-recovery basis; recent ones are provided on the Internet at no charge. Like Medline (described below), ERIC can be searched at no charge from several Web sites. In 2004, ERIC as an organization was restructured, and changes in document delivery and support services were implemented. Production and distribution of microfiche were discontinued, and more non-journal material is distributed from the ERIC Web site (http://eric.ed.gov/).

Sociological Abstracts

In many ways, Sociological Abstracts (SA) is the sociology counterpart to PsycINFO. It
indexes approximately 2,600 journal titles, as well as books, dissertations, and conference papers in the discipline. Because its indexing goes back to 1953 (with article abstracts since 1974), its retrospective coverage is not as complete. In addition, it uses its own controlled vocabulary, *Thesaurus of Sociological Indexing Terms*.

**Business Source**

Many aspects of psychology have applications in business: communication, groups, leadership, learning, motivation, stress, and so forth. EBSCO Information Services offers several versions of its Business Source database. Academic libraries most commonly subscribe to *Business Source Elite or Business Source Premier*, providing access to information in accounting, banking, economics, human resources, management, marketing and sales, and related business disciplines. The difference between the two is scope and coverage. Both index peer-reviewed journals, provide abstracts, and link to full text where available. As of January, 2005, *Business Source Elite* provided coverage of over 1,800 abstracted and indexed journals, over 1,100 full-text journals, over 900 peer-reviewed journals, and over 500 full-text, peer-reviewed journals. The coverage of *Business Source Premier* is broader and adds business trade journals, general business magazines, selected monographs, and other sources (EBSCO Information Services, 2005).

**Medline**

Medline is produced by a unit of the federal government, the National Library of Medicine, and can be searched at no charge as part of the library’s PubMed service. At present, the Medline database contains over 11 million citations from the 1960s forward and uses the Medical Subject Headings List (MeSH) as its source of controlled vocabulary. Its strengths include extensive international coverage of foreign language journals and breadth of coverage in medicine and related biomedical areas, including mental health and psychiatry, public and community health, and psychopharmacology.

The content and organization of indexing and abstracting tools, especially those produced over a long period of time and that began their production lives as printed products, can be complex to use. Using PsycINFO as an example, dissertations have been cited in the database for many years, although abstracts have been included for those entries only since 1995. Citations to materials before 1967 present a special challenge because they do not use the *Thesaurus*-controlled vocabulary and, therefore, you cannot rely on the same search strategy as that used for more recent material. Fortunately, database producers provide a variety of information sheets and tutorials that discuss the organization, content, and use of their products. Libraries also produce guides to commonly used databases that cover features specific to their local environment, including instructions on downloading search results and linking to the full text of articles.

**SEARCH PROCESS EXAMPLES**

**Leadership**

As already noted, before consulting the resources, preliminary work must be done to prepare for a computer search. We need to define our topic, narrow it, identify possible search terms, and structure our search. The example below provides a very brief illustration of this process.

One topic of great interest within industrial and organizational psychology is the area of leadership. Thousands of books and articles have been written on this subject. Our first activity must be to define our topic and narrow it to a reasonable scope.

**Defining and Narrowing the Topic**

A significant issue in leadership over the past few years has been the ethics of senior managers and executives. Numerous Fortune 500 companies have faced huge challenges due to what appear to be questionable practices of their senior managers—Enron CEO Kenneth Lay, Tyco Chairman Dennis Kozlowski, and Adelphia head John Rigas (Greenberg, 2003; Novack, 2003). In part as a result of such problems, Van Yoder (2003) asserts that it is becoming more difficult to recruit chief financial officers to
corporations. The Sarbanes-Oxley law was passed in 2002 by the U.S. Congress in an attempt to respond to ethical challenges (Sayther, 2003). But Barry (2002) suggests that a legalistic response is not necessarily the best approach to ethics. And Rogel (2003) suggests steps organizations and leaders can take to bolster trust and confidence in business organizations.

From a research perspective, there are many questions for the psychologist. How do senior managers develop values and ethics? How are these business leaders socialized? What personality attributes might dispose leaders to unethical behavior? What characteristics of the organizational environment support apparent lapses in business ethics? What might be done to better develop stronger ethical practices among emerging senior leaders?

We settled on a focus for our research in the following topic question: “How are ethics developed in senior managers of organizations?”

Search Term Identification

Our next step is to identify search terms that might be used to find prior publications on our topic. For each key term in our topic question, we will identify synonyms and related terms. The list follows:

- ethics. Also: values, morals
- developed. Also: development, socialization, change
- senior managers. Also: leaders, CEO, president, chair, CFO
- organization. Also: business, corporation.

Search Structure

Our next step is to structure our computer search, before starting with an index or database or the Internet. We will define our search using Boolean operators found in most search engines. Boolean operators (AND, OR, NOT) establish relationships between search concepts, allowing you to tailor your search and the resulting list of references to closely match your topic. We will employ the Boolean OR operator to retrieve any one of the terms in a set of synonyms. We will also employ the Boolean AND operator, requiring a member of each set to be present in our search. Because some terms may be very similar and use the same root word (e.g., develop and development), we will use the asterisk (*) as a wild card to locate these terms (i.e., using develop* would also retrieve references to development and developing). The following is our proposed initial search structure:

(ethics OR moral* OR value*)
AND (develop* OR social* OR change)
AND (CEO OR president OR CFO OR chair* OR lead*)

Note that this search structure uses three sets of terms. A source retrieved must have at least one term from each group, as required by the AND. For further information on Boolean structures and searching, consult Reed and Baxter (2003).

Database Selection

In the preceding section, we reviewed several widely available bibliographic databases. Our next step is to ascertain which bibliographic resources we should consult. Which are most likely to identify articles and other media that we will find useful? As PsycINFO is the most important bibliographic source in psychology, we will start there.

The Database Search

We entered our library’s online version of PsycINFO to conduct our search. Using our library’s access through EBSCO, we selected the Advanced Search option in PsycINFO. (Our search was conducted on December 6, 2003.) Our first pass retrieved 3,701 citations. Because it would be very difficult to review all of these citations, we need to narrow our search. In reviewing this search, we note that it included doctoral dissertations and several other publication formats in which we are not interested, so we successively modified our search. Table 3.1 provides examples of several of the searches we conducted and indicates the ways in which we modified them.
Table 3.1  Comparison of Results of Search Strategy Alternatives

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<th>Modification</th>
<th>Search Structure</th>
<th>Citations</th>
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<tr>
<td>1</td>
<td>Original search</td>
<td>(ethics OR moral* OR value*) AND (develop* OR social* OR change) AND (CEO OR president OR CFO OR chair* OR lead*)</td>
<td>3701</td>
</tr>
<tr>
<td>2</td>
<td>Limit to journal</td>
<td>(ethics OR moral* OR value*) AND (develop* OR social* OR change) AND (CEO OR president OR CFO OR chair* OR leader*)</td>
<td>973</td>
</tr>
<tr>
<td></td>
<td>articles; add -er to</td>
<td></td>
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<td></td>
<td>lead .</td>
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<tr>
<td>3</td>
<td>Delete value;</td>
<td>(ethics OR moral*) AND (develop* OR social*)</td>
<td>305</td>
</tr>
<tr>
<td></td>
<td>Delete change</td>
<td>(CEO OR president OR CFO OR chair* OR leader*)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Add AND business</td>
<td>(ethics OR Moral*) AND (develop* OR social*)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(CEO OR president OR CFO OR chair* OR leader*)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AND business</td>
<td></td>
</tr>
</tbody>
</table>

As you can see from Table 3.1, the way in which a search is defined can make a huge difference in what is retrieved. Making such small changes as selecting only journal articles, or using the word leader instead of lead* can make huge differences in the number of citations retrieved in a search. Also be aware that the search engine used and timing of the search can change the results. Using the WebSPIRS service (rather than EBSCO), conducting a search using the original search strategy on December 8, 2004 (1 year later), retrieved 4,720 sources (vs. 3,701). Conducting the most restricted search again (example four in Table 3.1) on February 9, 2005, yielded 19 sources (vs. 10 a year earlier), some of which were due to growth in the literature.

We start reviewing our citations. Several look very interesting and relevant to our topic. For example, one is an article by Agle, Mitchell, and Sonnenfeld, titled “Who Matters to CEO’s? An Investigation of Stakeholder Attributes and Salience, Corporate Performance and CEO Values,” appearing on pages 507 through 525 of the October 1999 issue of the Academy of Management Journal.

It would also be useful to consult an index to business literature such as Business Source Elite for access to additional sources not covered by PsycINFO. In doing so, we used the same search strategy and terms as in PsycINFO (see Table 3.1, line 4), but the results were very different. Limiting our search to full-text, peer-reviewed journals, we uncovered 117 citations that satisfied our search strategy, more than five times the number in our final pass using PsycINFO. One of the more interesting was an article on strategic leadership of ethical behavior in business. Thomas, Schermerhorn, and Dienhart (2004) argue that leaders have a great deal of power to guide behavior within their organizations. Responding to numerous recent instances of high-profile corporate fraud in the United States in another article, Hill, Stephens, and Smith (2003) explore its impact. Examining organizations recognized as socially responsible, they argued that there are significant positive benefits to positive corporate social behavior.

But we are not finished. After reviewing these citations, we may elect to modify our search strategy and do it again. Possibly we wish to cast our net more broadly, to organizations other than for-profit business organizations. We could also select another relevant
database that indexes a different set of literature. ERIC, mentioned above, might provide some insight on educational leadership. Finally, we might also search the World Wide Web.

**Eyewitness Testimony—Another Search Example**

For many years psychologists have been concerned about the reliability and accuracy of memory. The review chapter on memory by Koriat, Goldsmith, and Pansky (2000) considered many types of distortions and limitations that may occur in memories (e.g., false recall, misattributions, and source errors). In his popular book on memory, Daniel Schacter (1996, ch. 4) recounted instances of memory distortions involving mistaken identity, and recollection of events that never happened.

A popular topic has been the accuracy of eyewitness testimony. The justice system relies heavily on eyewitnesses and places a great deal of weight on their testimony in a courtroom. Cases of eyewitness errors, however, led some psychologists to question the limits of reliance on eyewitnesses. Since the 1970s, researchers have been conducting systematic studies on factors affecting eyewitness accounts (e.g., Aronstam & Tyson, 1980; Blonstein & Geiselman, 1990; Loftus, 1975; Loftus & Palmer, 1974; Smith & Ellsworth, 1987).

Suppose we wished to learn more about the limits of eyewitness testimony. After reading a good overview on the topic (e.g., Wells & Olson, 2003), we restrict the scope of our topic. We could focus on variables such as the witness, the event, or how questions are asked (Loftus, 2003). As in the prior example, we should be concerned about how we structure our search and the terms we use. For example, in PsycINFO controlled vocabulary, the term *witnesses* is used instead of *eyewitness*. Knowing the names of key researchers who have conducted research on our topic enables location of other articles by the same authors (e.g., Phoebe Ellsworth, R. C. L. Lindsay, Elizabeth Loftus, Elizabeth Olson, Vicki Smith, S. L. Sporer, and Gary Wells).

Conducting a search of PsycINFO, using the search terms *witness AND testimony*, and limiting the search to peer-reviewed articles, yielded 80 citations. In one, the influence of gender stereotypes is the focus of research reported by McKinnie, Newton, Terry, & Schuller (2004).

Conducting an additional search of PsycINFO for peer-reviewed sources, this time seeking citations authored by the prominent researcher Elizabeth Loftus, we retrieved 161 citations. Reviewing the list, we learn that Ms. Loftus has been involved in many areas of memory research. Some are not directly relevant to our specific topic, such as the article on the impact of advertising on memories by Braun, Ellis, and Loftus (2002).

The retrieval of large numbers of citations, and many not related to our specific topic, underscores how critical it is to have a well-defined search strategy with carefully selected search terms. Reviewing hundreds of sources to find the few that are directly related to our research topic consumes significant time and a great deal of effort.

**Libraries of the Future**

What does the future hold for libraries? Scholarly research and communication are in the midst of significant trends that will shape how people acquire and use information in the future:

- The cost of print materials and information can be expected to continue to increase. At the same time, the volume of information available continues to expand. If current trends continue, this may result in increasing pressure on both personal and institutional library budgets, forcing increased reliance on nonlocal information sources.
- Electronic publishing and the use of electronic media in publishing are occurring with increasing frequency. Increasing numbers of sources are available as electronic documents. Encyclopedias, almanacs, atlases, and even journals are being produced in some electronic form in addition to—or instead of—their paper counterparts. Production of research tools in an electronic medium, whether it is CD or Web-based, can allow flexibility for users to search, format, and extract the information.
• Data sets from researchers and research institutions may become increasingly available directly from authors, agencies, or research organizations in electronic form. This will result in increased distribution of scholarly output, including fugitive literature. It will also disperse access to research output; that is, more publications will be found outside the traditional publication formats (books, journals).

• Use of the Internet has exploded since the early 1990s. Graphical user interfaces such as Internet Explorer and Netscape allow rapid electronic written communication worldwide and afford increasing flexibility in the type and format of information shared among researchers.

• Scanning of hard copy documents for preservation and electronic delivery may mean an increasing retrospective information base accessible in electronic form.

The availability of full-text sources online will mean greater access to information. Electronic formats will also allow faster communication of that information among geographically dispersed researchers. Users, however, will face a number of obstacles in use of the virtual library: For example, the quantity of information will be imposing and difficult to negotiate effectively, and monetary charges will increasingly be levied for retrieval of information from remote sites.

RECORDING AND ORGANIZING YOUR INFORMATION

There are many sources of information on this topic. Among these are the APA Publication Manual (2001); Booth, Colomb, and Williams (2003); and Sternberg (2003). Basic steps in this process are detailed below.

Taking Notes

Searching for and locating material appropriate to your research topic are among the first steps, followed by reading, organizing, and synthesizing the information. One step in this process is to use a systematic approach to taking notes and organize them in a coherent manner.

There are several ways to accomplish complete and accurate notes. One is to use the index card method. This is accomplished by recording bibliographic information about each source on a small index card (for example, 3" × 5") with notes on corresponding 5" × 7" cards. This system has several advantages. It is portable. Cards can be sorted as you develop your outline and flesh out the paper. The process of recording notes can help you focus on the salient points of the item you’re examining.

Another approach is to use software designed to record or collect bibliographic information, many such programs also allow you to record notes and outline your project. These include Reference Manager, EndNote, and Library Master, although there are others; see Chapter 23 by Calderon and Austin. Such software takes bibliographic information and reformat it for the reference list in your paper. Some software will import citations from databases such as PsycINFO and ERIC, placing bibliographic information in the correct fields and then exporting those references into standardized publication formats. Some software runs not only on desktop and laptop computers but also on palm-sized computers or personal digital assistants (PDAs).

As you examine each item (e.g., book, chapter, journal article, research report), record basic bibliographic information about it. This includes author(s), title, publisher information, date of publication, pages, journal in which it appeared, and enough location information so that you can find it again if needed (such as a library call number or URL). Even if the source is not germane to your topic, recording this information serves as a reminder that an item has been examined and has been discarded. Recording information in a standardized publication format such as APA will insure the information is complete and will save time later on.

Selecting the key points from a publication and summarizing those points are important skills. Read the item in its entirety and think about the contributions it contains. Then in your own words summarize those concepts and how they contribute to your own project. Resist the temptation to simply photocopy or print an article or chapter, highlighting those sections that
are important. This will not help you synthesize the material into your own research. In the case of electronic media, resist the urge to cut and paste large sections of text from a publication, even if you enclose it in quotation marks. This approach does not allow you to summarize the content and, more important, can lead to plagiarism, even if it is unintentional. Think about what you read, isolate the important points, and summarize those points in your own words. Save direct quotes for short excerpts, using the APA Publication Manual as a guide.

Outline Your Project

Creating an outline for your own paper can take many forms. Some people begin by constructing a very detailed outline, a skeleton fleshed out by the content you have synthesized in the course of reviewing the research of others and discovered in the course of your own research. The ability to create detailed outlines is sometimes integrated into word processing software or note-taking software.

Alternatively, some people are more comfortable with a very loose content outline, no more detailed than the structure of a research article described in Chapter 23. This outline can be fleshed out by relying on the spewing out method described in Chapter 24, “Writing Rough Drafts,” followed by a series of rewrites to add structure. Whatever method reflects your personal style, it’s important to be flexible as your research project and paper develop.

RECOMMENDED READINGS

Several recent publications cover research paper topic selection and definition. Now in its fourth edition, Sternberg’s The Psychologist’s Companion (2003) details the process from topic selection and outlining content to reporting research results. The Craft of Research (Booth, Colomb, & Williams, 2003) also includes the processes of identifying, planning, and designing the research project, as well as communicating results.

Library Use: Handbook for Psychology (Reed & Baxter, 2003) not only covers selecting and refining the research topic, it extends those activities into the literature search process. Specific examples from a variety of subfields illustrate use of important finding tools in psychology and related disciplines. It provides expanded discussion of publication types seldom covered elsewhere, such as locating published tests, government publications as sources of research activities, and using cited reference literature searching. Two volumes retrospectively survey the literature of reference materials relevant to psychology. Although dated, Research Guide to Psychology (McInnis, 1982) and Psychology: A Guide to Reference and Information Sources (Baxter, 1993) are annotated bibliographies covering indexes and abstracting services, directories, journal literature, and other tools to access research communication and the information on the profession of psychology.

As the basic style guide used in psychology, Publication Manual of the American Psychological Association (APA, 2001) is an essential reference for all writers in the discipline for its tips on content organization, reference and paper formatting, and the process of preparing one’s research for publication.

EXERCISES

1. Narrow the topic. Identify a key source, such as an annual review or handbook article on your topic. Read the source. Select an aspect of the topic that sounds interesting. Reduce the scope of your topic to a size that might be manageable for your research and bibliographic review. Write a topic statement or topic question.

   You might consider one of the following sources as a starting point:
2. Develop a topic search strategy. Identify your topic. Review a relevant source. Develop the search terms that you will use to conduct your search.

You might begin by selecting one of the sources you considered in Exercise 1 above or a source such as one below:


3. Conduct a search. Start with a search strategy and terms you have identified that are related to a topic of interest. Identify a relevant database such as PsycINFO, Business Source Elite, or ERIC. Conduct your search. Review and evaluate the results of your initial search. How relevant are the results of your search to what you were seeking?

Modify your search strategy to restrict the search. Add required parameters such as a subject population, age period, or specific aspect of the topic. Perform the search again. Compare the results from this new search with results of your initial search.

(If your search yielded no results, expand your search strategy by adding synonyms and related terms. Then perform the search again.)

You might begin by selecting one of the topics noted above, or you might use one of the sample topics suggested below. In each topic below, you would probably need to restrict your search to narrow its focus.

[Clinical] Posttraumatic stress disorder
[Cognitive development] Neural pruning
[Education] Teacher expectations, Pygmalion effect
[Ergonomics] Human-computer interaction
[Learning] Spontaneous recovery
[Sleep disorders] Insomnia
REFERENCES


Beck, S. (1997). *The good, the bad & the ugly: or, why it’s a good idea to evaluate Web sources*. Las Cruces: New Mexico State University Library. (http://lib.nmsu.edu/instruction/eval.html)


