

Chapter 4



Strategies for Reviewing the Research

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Learning Objectives

After reading this chapter, you should be able to:

- Identify and locate resources to use in finding appropriate literature on social and criminal justice topics, including online sources and treeing.
- Evaluate both the breadth and depth of social and criminal justice research, and how these dimensions influence research and literature reviews.
- Evaluate the credibility of sources, using criteria such as relevance, primary versus secondary, authorship, expertise, currency, accuracy, and corroboration.
- Analyze journal articles in a systematic way to extract relevant and pertinent information.

Once a topic is identified and developed into a workable research question, the research begins. The ability to analyze and summarize information from a variety of sources, which includes identifying common themes, is an incredibly valuable skill in college. It can also be viewed as a valuable skill by criminal justice employers and is sometimes necessary for advancement within the field. A "literature review" or "literature search" is the major component of the CRJ 422 Social and Criminal Justice Research Project and is conducted to identify the ideas that have already been made public or presented by scholars in the field. Although some of these ideas could be personal opinions or anecdotal reports, students should look for scholarly, peer-reviewed literature and learned opinions from experts in the field. The process of reviewing previous research allows students to build the foundation for answering the research question.

When students conduct a literature review, each aspect is related to specific components of the research question. The student presents the outcomes and results of past research in order to provide an answer for the research question, while concluding the literature review with recommendations for future research.

When outlining a literature review, the writing approach should focus on providing a presentation of the facts in an impartial and objective manner, meaning the student should avoid providing personal opinions. Although the literature reviewed may persuade a student in his or her personal opinion, this opinion should not be expressed in this type of research paper. Students should remember that the evidence will answer the research question, not personal opinions.

A major component of this approach is the ability to incorporate evidence—specifically, research-based evidence—into the written text. Because of the unique nature of social and criminal justice research, a student might take a broad approach, which can include more than one of the fields, or a narrower approach, which would involve a specific focus on one field. Whatever approach the student chooses will ultimately affect the nature of the literature review.

4.1 Locating Resources

The first step in writing a literature review is to find appropriate literature that pertains to the research topic. Local public and university libraries, as well as a careful and systematic Internet search (more on this in a later section), are all prospective options. In addition, Ashford University offers a number of convenient resources for the online student, including an e-book database called ebrary, and the Ashford University Research Tutorial. In literature reviews, journal articles are commonly utilized and summarized, but other types of resources can provide valuable academic contributions as well (e.g., books, monographs, recorded interviews, book chapters, websites, and so on). The criteria necessary to evaluate the credibility of information (retrieved online or otherwise) are presented later in this chapter.

The Online Library and Other Online Options

Many institutions, including Ashford University, pay for institutional access to online databases that help search what is available and help locate the materials for direct access. These databases are housed in Ashford's online library (login via the Student Portal) and include electronic books, journals, and other types of articles. Social and criminal justice students will likely use EBSCO, JSTOR, ProQuest, Project MUSE, and ebrary (see the library's Database List by Subject). However, students are not limited to these databases. In addition, local public libraries and/or other university libraries might have access to databases to which Ashford University does not subscribe. But the Ashford University online library does offer descriptions of each database, as well as tip sheets and guides for research and advanced search techniques, which may be helpful to students. Knowing the important keywords as well as reviewing all relevant databases are essential steps taken prior to conducting the actual research, source evaluation, and analysis of the information. For additional advanced techniques on searching databases, see *Tips & Tools: Making the Most of Databases—Advanced Features*.



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The online library is a great tool for locating resources.



Tips & Tools: Making the Most of Databases—Advanced Features

Databases like ProQuest and others are called **search engines** and are indexed on a number of criteria. This indexing is used to facilitate quicker retrieval when a student enters the search terms in which he or she is interested. However, a literal search engine may miss relevant documents if the wrong term is used or if the term is misspelled. Unless the student asks ProQuest to return hits that are variants of spellings, the database will find only literal, exact matches (i.e., the exact word). To provide more flexibility, two advanced features to consider using are the commands for truncation and wildcards, shown in Table 4.1.

Table 4.1: Truncation and wildcard characters

Character	Explanation	Example
*	The symbol * is used as a right-handed truncation character only; it will find all forms of a word.	Searching for crim* will find "crime," "criminal," "criminology," etc.
?	The symbol ? is used to replace any single character, either inside the word or the end of the word. ? cannot be used to begin a word.	Searching for " wom?n " will find "woman" and "women." Searching for " ?w " will find "law," "low," etc.

The * symbol (asterisk) is used as a type of wildcard that will search for words that start with the same root letters but may end differently. For example, a database search on the word *legalization* might not turn up related words like legal, legally, legalize, legalizing, or legalized unless these latter words were also mentioned in the journal article. But a search on *legal** would return all possible options for words starting with l-e-g-a-l. Using the ? (question mark) feature can be helpful as well, as in the example from ProQuest in the table above, using the term *woman* and *women* in one search.

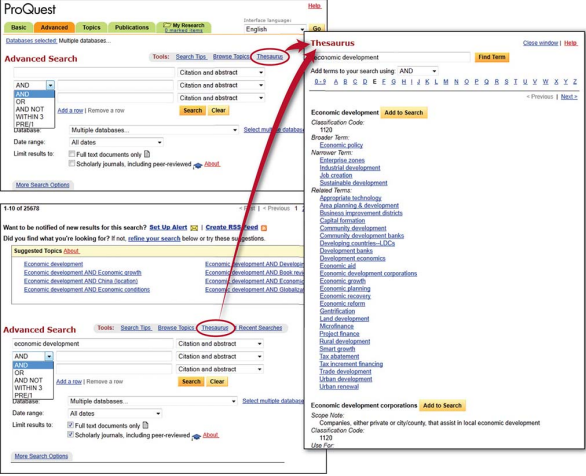
Boolean operators are mathematical terms and descriptors that can be used in database searches to widen or narrow the scope of the search. The most common Boolean operators used for database searches are *and*, *or*, and *not*—but there are other advanced features as well. For example, the terms *woman* and *women* can be searched for simultaneously using *woman or women*, in addition to the *wom?n* feature. This means the database should retrieve any journal article that contains either term, as opposed to *woman and women*, which indicates that the journal article must contain both terms. The *not* function can be useful as well. For example, a search including *not dissertation* means dissertations should not be included in the list of database matches (hits). Such searches can also be combined on the same line, such as (*woman or women*) *not dissertation*. To find database matches with terms within the proximity of one another, see the advanced options in Table 4.2.

Table 4.2: Operators used in database searches

Operators	Boolean, proximity, and adjacency operators are used to broaden and narrow your search.
AND	Find all the words. When searching for keywords in "Citation and Document Text," AND finds documents in which the words occur in the same paragraph (within approximately 1,000 characters) or the words appear in any citation field. <i>Example:</i> Internet AND education
AND NOT	Find documents that have the first word, but not the second word. <i>Example:</i> Internet AND NOT html
OR	Find any of the words. <i>Example:</i> Internet OR intranet
W/#	Find documents where these words are <i>within</i> some number of words apart (either before or after). Use when searching for keywords within "Citation and Document Text" or "Document Text." <i>Example:</i> computer W/3 careers
W/PARA	Finds documents where these words are <i>within</i> the same <i>paragraph</i> (within approximately 1,000 characters). Use when searching for keywords within "Document Text." <i>Example:</i> Internet W/PARA education
W/DOC	Find documents where all the words appear <i>within</i> the <i>document</i> text. Use W/DOC in place of AND when searching for keywords within "Citation and Document Text" or "Document Text" to retrieve more comprehensive results. <i>Example:</i> Internet W/ DOC education
NOT W/#	Find documents where these words appear but are <i>not within</i> some number of words apart (either before or after). Use when searching for keywords within "Citation and Document Text" or "Document Text." <i>Example:</i> computer NOT W/2 careers
PRE/#	Find documents where the first word appears some number of words <i>before</i> the second word. Use when searching for keywords within "Citation and Document Text" or "Document Text." <i>Example:</i> world pre/3 web

One more useful tool that might prove helpful is ProQuest's built-in thesaurus feature. This feature helps users identify other search terms that may be synonymous with the initial search term or related to the term in some way. For example, a very broad search term, such as *juvenile delinquency*, would likely return hundreds of thousands of hits. But perhaps *juvenile delinquency* isn't quite the right term; the thesaurus feature will offer conceptually related ideas (and this feature is quite different from a literal search engine): broader terms, narrower terms, and then related terms. So if the true topic of interest is really juvenile female gangs involved in delinquency, clicking on the suggested *Female Gang Members Delinquency* will make a search more precise. See Figure 4.1.

Figure 4.1: ProQuest's Thesaurus feature



Access ProQuest's Thesaurus feature by clicking on "Thesaurus" on the Advanced Search page or at the bottom of a search results page. Note that the "Suggested Topics" also provides additional search terms and related topics. As with other search engines, ProQuest includes dropdown menus of Boolean operators to help widen or narrow the scope of the search.

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The power and complexity of the available databases can be overwhelming to students who are firsttime researchers. The key is to practice with these new tools, especially at the beginning of the research process. By becoming competent in database research in the beginning of the project, students will be better prepared to conduct the actual research and literature review. In addition, this competency will be beneficial to provide search skills that are useful well beyond the completion of this course.

In addition to the library resources available to students, another route for discovering research of interest involves using Google Scholar, which searches scholarly literature and abstracts available on the Web, and even on Google itself. For example, because of the unique nature of criminal justice and its four major fields of study, a library database may at times be too narrow and too focused, so resources that are more broad based (such as Google Scholar) might identify research efforts not captured in other databases. There are also numerous governmental depositories of resources (e.g., the Educational Resource Information Clearinghouse, or ERIC) that may be helpful to students. A **reference librarian** who has been educated and trained to help others locate reference materials is a great resource to consult in order to determine whether government databases may be of value.

Knowledgeable People

Faculty can also act as resources, or at least a starting point for students. Depending on the course, the instructor may have more expertise about a given topic, or at least be able to point students in a direction of additional sources. A reference librarian also has special talents that can be particularly useful. Ashford University's team of librarians is familiar with the available databases and can assist students with locating resources, generating search terms, and narrowing research topics. Ashford librarians are available via e-mail at library@ashford.edu, and by chat or phone.

Treeing

Treeing is a technique by which a student examines the references section of an article to determine whether some of the sources cited might also be of value as part of his or her current research project. This technique is particularly effective when the student identifies a spot-on research article directly addressing the issue of interest; odds are, some of the references in that article may be references the student wishes to consult for his or her own research paper. Even if a particular research article is not ultimately cited in the research paper, some of the references from that article may be valuable for treeing. Thus, be sure to save PDFs and paper copies because those resources may be valuable in a different context. For an example of treeing, see *Tips & Tools: Example of Treeing*.



Tips & Tools: Example of Treeing

A research question that evaluates the effectiveness of a juvenile restorative justice program could draw related resource material from social justice journals as well as criminal justice journals. The article "Putting a human face on crimes: A qualitative study on restorative justice processes for youths" was published in the *Child & Adolescent Social Work Journal* (2011, October), 335–355. In the References section, 66 sources are presented. A review of the first 25 citations yields the following nine potential articles that could be relevant to the research question:

Applegate, B. K., Davis, R. K., & Cullen, F. T. (2009). Reconsidering child saving: The extent and correlates of public supports for excluding youths from the juvenile court. *Crime & Delinquency*, 55(1), 51–77.

Bazemore, G. & Green, D. L. (2007). "Yardsticks" for victim sensitive process: Principle-based standards for gauging the integrity of restorative justice process. *Victims and Offenders*, 2, 289–301.

Braithwaite, J. (1999). Restorative justice: Assessing optimistic and pessimistic accounts. *Crime and Justice*, 25, 1–127.

Braithwaite, J. (2002). Setting standards for restorative justice. *British Journal of Criminology*, 42, 563–577.

Butts, J. A. & Mears, D. P. (2001). Reviving juvenile justice in a get-tough era. *Youth & Society*, 33(2), 169–198.

Calhoun, A. & Pelech, W. (2010). Responding to young people responsible for harm: A comparative study of restorative and conventional approaches. *Contemporary Justice Review*, 13(3), 287–306.

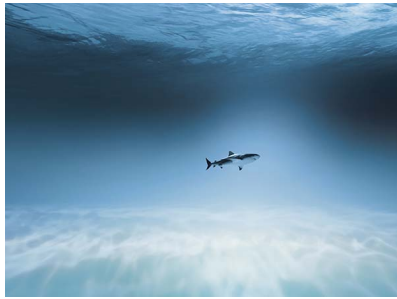
Choi, J. J. & Severson, M. (2009). What! What kind of apology is this? The nature of apology in victim offender mediation. *Children and Youth Services Review*, 31, 813–820.

Daly, K. (2002). Restorative justice: The real story. *Punishment & Society*, 4(1), 55–79.

Hayes, H. & Daly, K. (2003). Youth justice conferencing and reoffending. *Justice Quarterly*, 20(4), 725–764.

Once these potential articles have been identified, the student should then search the database for the actual articles. If an article provides information worthy of inclusion in the research project, the student would synthesize that information and add the citation to the reference section of the project. As a result of the treeing process, if all nine articles are worthy of inclusion, the student has added nine resources to his or her research project, provided from the one initial article.

4.2 Breadth of Field: Criminal Justice (Broad) and Topic-Specific Databases (Narrow)



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Should you take the broad approach and explore the ocean, or the narrow approach and explore the shark?

One of the early decisions in writing a social and criminal justice research paper is whether to take a broad approach or a narrow approach. As mentioned in Chapter 3, criminal justice encompasses four major fields of study (law enforcement, courts, corrections, and juvenile justice). Social justice encompasses three main principles (equality, solidarity, and human rights). A broad approach covers a *breadth* of topics so that a student may attempt to integrate multiple issues when examining phenomena and events of interest. This sort of broad viewpoint can include historical and cultural issues within several or all of the fields to examine the impact of events that influence our daily lives. For example, consider the topic "sex offenders." A student might explore the context of how sex offenders are identified and labeled (legal), or the specific behaviors that sex offenders engage in (behavioral), or how the societal view of sex offenders has changed from the 20th to the 21st century (historical and cultural), or the role that the Internet has played in pedophilia (cultural and legal). To take a broad approach, the student might address all of these aspects in one literature review.

A narrow approach explores a subject in *depth*. In the earlier example about sex offenders, a student taking a narrow approach would perhaps explore only the legal perspective or only the cultural perspective but will explore it more deeply. This type of approach is common in criminal justice. Perhaps the student wants to understand a specific crime or examine a specific offender's behavior. For example, a student may want to explore the early life of Ted Bundy in an attempt to identify whether events in his childhood had an effect on his later criminal behavior.

The type of approach would undoubtedly influence the types of journal articles a student might review in preparation of the research paper. There are journals such as *The Journal of Crime and Justice* and *Crime and Delinquency*, which publish a broad spectrum of articles and reflect the integrative work that criminologists often do. Numerous other journals focus on one of the specific fields or on specific topics or issues. For example, *Police*

Studies, *Policing and Society*, and the *FBI Law Enforcement Bulletin* all focus on law enforcement topics and issues. *Criminal Law Quarterly*, *Criminal Law Review*, and the *Journal of Criminal Law* all focus on legal and court issues, while *Corrections Today* focuses on current issues and trends in corrections at the local, state, and federal levels. In addition, specific topic journals include *Criminal Justice Ethics*, *Child Abuse and Neglect*, *Journal of Drug Issues*, *Federal Probation*, and the *Journal of Criminal Justice Education*, which all focus on a specific topic or issue within criminal justice. For social justice topics, many journals are topic specific, while others are more integrative in nature (i.e., *George Mason University Civil Rights Law Journal*, *Journal of Human Rights*, *Journal of Sociology and Social Welfare*, *Race, Gender & Class*, *Social Justice*, *Social Justice Review*, *Social & Legal Studies*, and *Windsor Review of Legal & Social Issues*).

Both broad and narrow approaches are effective in developing research papers that a student writes in social and criminal justice. However, depending on the topic and research question, the best approach might be a hybrid approach in which the student simultaneously examines the big picture (broad) while also examining important specific details (narrow). Being able to develop the big picture (broad approach) while incorporating the important specific details (narrow approach) is an effective strategy, particularly when the research question involves a topic that can be evaluated on both a general and a specific perspective. For example, in a study of Ted Bundy, not only would his criminal behaviors be examined, but the student would also examine his childhood history as well as the social and cultural contexts in which his crimes were committed.

4.3 Evaluating Sources

However broad or narrow the research topic might be, the student will still face the task of sifting through the numerous potential sources or "hits" on a database search. In evaluating resources, students should consider the source's relevance to the topic at hand as well as its **credibility**, or trustworthiness. This is particularly true of Internet sources. Search engines such as Google Scholar and JSTOR can be useful in uncovering sources unavailable on library databases, such as government records and sources at college libraries. However, because it is more difficult to determine an Internet source's credibility, students should take extra care in evaluating these sources. The following sections recommend specific criteria for making the decision about the credibility of the source. In truth, sometimes it takes quite a bit of detective work to determine whether the information from a particular source is believable or not.



Wu Tao/OJO Images/Getty Images

When conducting Internet research, it is important to verify sources and make sure that they are trustworthy.

Relevance

Imagine that a student is using library resources and search engines to research a topic of interest. A search result emerges with many good leads on the topic. How does the student decide which materials to retain and which to ignore? To be able to do this efficiently is a skill, and like any skill, it will take practice before it can be perfected. But how does a student make those decisions *now*?

Honestly, it is a bit of trial and error. For the research project in CRJ 422, it would be better to err on the side of retaining too much information (for possible inclusion in the research paper) than to not have enough information available. It is easier to discard a source that is not used in the final project than it is to go back and generate more searches and reviews. A strong outline and a clear research question can be the litmus test for how relevant a lead or source might be. That is, a student can compare the "gist" of a located resource to the research question and ask whether the resource under consideration could contribute to answering the question.

It may seem odd to include sources that contradict each other in answering the research question. However, it is important for all students to strive to be open-minded and critical thinkers, looking for evidence on all sides of an issue. Do not ignore contradictory research just because it is contradictory; be sure to acknowledge alternative points of view. Critically thinking about social and criminal justice issues almost always means considering multiple points of view.

Primary Versus Secondary Sources

As much as possible, students will want to retrieve **primary sources**, which are original documents. For example, Doug Robinson conducted a research study on the effects of alcohol on criminal justice and published an article in the *Journal of Contemporary Criminal Justice*. As Robinson was the researcher and he wrote the article, this is considered a primary source.

It is also possible to have articles that review or summarize a primary source, written by another author. These are called **secondary sources**. For example, if Stan Mitchell were to review and critique Robinson's article about alcohol and criminal behavior, and write and publish his own article in the *Journal of Criminal Justice and Popular Culture*, Mitchell's article would be a secondary source. Although Mitchell's article is written about the original research conducted by Robinson, it is Mitchell's interpretation of the research and is thus a secondary source.

Essentially, authors cannot control how others interpret their work; they can only control what *they* write. Criminologists prefer primary sources whenever possible, as they provide the opportunity to understand the researcher's perspective in his or her own words, as opposed to someone else's interpretation.

Authorship

For any information to be considered credible (including a journal article), it is important that an author be listed (Ormondroyd, Engle, & Cosgrave, 2011). When an author (or authors) wants to make an evidence-based claim in criminal justice research, the credibility of that claim is based in part on the author's identity, which is also related to *expertise* (discussed in the next section). In general, scholars should be willing to attach their name to their own work. There are rare occasions when a criminologist might publish a work as "Anonymous," but a student should question why. It could be that a topic is so controversial that an author fears some sort of academic retribution, such as the denial of tenure or a promotion. In some limited cases, it might make sense to publish anonymously, but those extenuating circumstances are rare. So when authors are unwilling to attach their names to an idea or claim, one might start to think, "Is this idea so flawed that no one was willing to put their name to it?"

Anonymous publishing happens frequently on webpages. A student might locate some great web-based information in the process of conducting research for the literature review, but there is no author listed on the page (or document) of interest. It may take some extended detective work to ascertain the author, but that process is important. If no one is willing to attach a name to the work, then this should raise a red flag and the material should not be used.

The question of authorship is why many educators become concerned when students cite Wikipedia entries in their assignments. Wikipedia contributors often do not identify themselves. Couple this **anonymity** with the unrestricted ability to change an entry (at least temporarily), and doubts about credibility will certainly emerge.

This is not to say that Wikipedia has no value. It can be a good source for generating ideas or seeing what others believe about a topic. In essence, the importance of Wikipedia hinges on how students will use the information. For example, if a student were to look for the crime rate in New York City and Wikipedia provided the wrong answer, that incorrect information may result in a point deduction for the student on a test or assignment, but getting the wrong information in this instance would not generate great harm. However, if that same student were employed by the New York Police Department and had gathered an erroneous crime rate for the city from Wikipedia, city and police policy decisions based on that erroneous information could lead to ineffective policies and policing. Then the credibility of the information truly matters.

When authorship is tied to information, accountability is possible. Has anyone on Wikipedia ever been sued for providing incorrect information? Probably not, but the authoring of ideas and claiming that authorship are important aspects of credibility and accountability.

Determine Credibility of Internet Sources

Educators discuss the ways to determine the validity of internet resources.

Critical Thinking Questions

- Why is the publication date of an article or website important in determining its credibility?
- How might consulting several sources on the same topic enhance your argument?

Expertise



Harvard professor and African-American scholar Henry Louis Gates, Jr. has been at Harvard since 1991 and undoubtedly has gained considerable credibility in his area of expertise.

In addition to knowing the identity of an author, it is also important to be able to gauge the relative expertise of the person or organization making the claim. That is, does the person making the claim have the **expertise**, credentials, and know how to make an appropriate and accurate claim? Every source has a point of view, whether a criminology professor at a university, a nonprofit agency working to reduce domestic violence, or a government agency charged with fighting the war on drugs. No source is completely objective, so it is important to understand the author's underlying motivations. Expertise is used to denote a specialization in a scholarly discipline or topic and can be measured using the author's track record in publishing, training in a particular area, etc.

In analyzing the expertise of the author and the material, students should be aware of two additional factors. First, just because the author has graduate education (master's degree, doctorate), this does not necessarily make him or her an expert. If an author makes a specific claim or statement regarding a point of research, students should also seek out others who have researched the topic and compare the findings. If the author in question provides findings that are in sharp contrast to numerous others with similar results, the student should question the expert's findings and research abilities. Although finding a new theoretical explanation for an issue is possible and highly sought after in social and criminal justice research, other authors should be testing the findings and either supporting or discrediting the new data.

Second, just because an Internet source has ".edu" (a domain reserved for educational institutions) as part of the URL, this does not necessarily lend expertise to authors or to the information they provide. Ideally, the information retrieved from an educational entity would be accurate and credible, but students should not make that universal judgment. Ultimately, students need to fully and thoroughly explore the accuracy of information from multiple sources and utilize all the tools provided in this chapter to determine which sources to use and which not to use.

Currency

Currency refers to the publication date of the journal article or other information. With a journal article, the year of publication should be clearly identifiable, as should the journal's volume number and issue number. With web-based information, it is often much more difficult to determine its publication date, which is why "n.d." is used in references at times, meaning "no date" was located or identified.

The date provides yet more evidence about the credibility and believability of information; undated information can still be useful, but the student needs to rely on other criteria (authorship, expertise, etc.) to make the case for credibility. However, currency doesn't necessarily mean the article or material was published within the last year. For example, if a student is researching prohibition and its relationship to organized crime, gathering articles written in the late 1920s and 1930s would certainly be relevant, and currency would not be an issue with this topic.

But if a student is examining the use of social networking sites by pedophiles to identify and locate potential victims, the currency of sources does matter. As social networking sites have become more plentiful and available in the 21st century, using a journal article from the 1990s about the emergence of social networking sites may not be current and could lead to erroneous research conclusions. Although currency may matter in some research and not in others, students should still seek out articles and sources for which a publication date is available, rather than those with no date.



Currency is an essential facet of academic importance. For example, the impact of Facebook has significantly changed since its inception in 2004 and articles from 2007 may no longer be relevant.

Accuracy

Judging the accuracy of academic sources is a complex task requiring some expertise on the student's part to determine whether an author "got it right." In some ways, this process is a bit analogous to looking up a word in the dictionary that one knows absolutely nothing about. Since no prior knowledge is available, one can either just trust the dictionary definition or seek to acquire more knowledge about the topic. A student in social and criminal justice should rely on other indicators (at first) concerning the accuracy of a journal article until acquiring enough expertise for independent judgments.

One of the key ideas underlying accuracy of research is the lack of **bias**, or prejudice, in the presentation of information (Harris, 2005). The more a student reads journal articles, the better he or she will become at identifying such bias; it may be slight at times and at other times flagrant. Useful information can be extracted from a biased source, but it is important to remember that the bias colors any ultimate interpretations. For different types of bias that can occur within the realm of research, see Table 4.3.

Table 4.3: Types of bias

Type of bias	Description
Publication bias	(Positive results bias) The tendency on the part of the investigators, reviewers, and editors to submit or accept manuscripts for publication based on the direction or strength of the study findings.
Language bias	Languages of publication depend on the direction and strength of the study results.
Funding bias	Bias in the design, outcome, and reporting of industry-sponsored research in order to show a favorable outcome.

Outcome reporting bias	A study in which multiple outcomes were measured, but only those that are significant are reported—not those that were insignificant or unfavorable.
Database bias	Biased indexing of published studies in literature databases. The literature search will be biased when it is based on a database in which the results of indexed studies are systematically different from those of nonindexed studies.
Study quality bias	Studies of lower or higher quality are associated with positive or favorable results.
Gray literature bias	The results reported in journal articles are systematically different from those presented in reports, working papers, dissertations, or conference abstracts.

From Cochrane Collaboration (2011).

Another consideration is the distinction between assertion and evidence (Galvan, 2006). An assertion is an author's opinion about the meaning or interpretation of data; it may be the author's own data reported in an empirical study or an assertion about the data of others. Evidence is the quantitative or qualitative information or data gathered using appropriate research methods. Evidence is typically presented in the results section of an empirical journal article. Solid evidence should stand on its own, while the assertions made based on that evidence should be carefully evaluated. For example, based on the same research evidence regarding the benefits of medical marijuana, two students may develop very different assertions about the practical applications of the evidence (e.g., determining if the benefits of medical marijuana outweigh the costs or harms). So, when evaluating the accuracy of an academic source, students should strive to accurately differentiate between assertions and evidence.

Corroboration

If research findings or results from a journal article seem too good to be true, they probably are. Another old saying in research is that "if it hasn't happened twice, it hasn't happened." Advances in research are based on the accumulation of corroborating, or supporting, evidence. When much evidence for a particular idea or proposition exists, we tentatively believe it until solid contradictory evidence is available.

In a critique of a resource, if the new findings help to confirm previous findings, then the journal article under review is helping to **corroborate** existing evidence. At times a newly published article may contradict existing research, and in that case it is the obligation of the author to explain why these new results do not corroborate existing research. For example, a new research approach may have been utilized, or a survey scale was refined, or some other methodological improvement was developed. In any case, it is incumbent upon the author to explain how the new evidence contributes to the current understanding on the topic (typically appearing in the discussion section of an empirical journal article). The more corroboration that exists for an idea, the more researchers can rely on that idea being correct.

For a slightly different conceptualization (and summary) of the preceding points that contribute to determining the value of information (especially online information), research librarians (e.g., University of Iowa, 2011; University of the Fraser Valley, 2009) use what is known as the **CRAAP test**, in which the characteristics of currency, relevance, authority, accuracy, and purpose are used to interpret the value of the information (see Table 4.4).

Table 4.4: CRAAP test

Currency: the timeliness of the source and the information	• When was the information posted? • When was it last revised? • Are links functional and up-to-date? • Is there evidence of newly added information or links? • Is the information still considered accurate? Has more recent research challenged this information? Don't exclude articles or information because of the publication date; instead think about the currency and relevance of the arguments presented.
Relevance/coverage: the importance and scope of the information	• Does the information relate to your topic or answer your question? • Is the topic covered with sufficient depth and breadth? Is the information comprehensive enough for your needs? Are the complexities of your topic adequately addressed? • Could you find the same or better information in another source? • Is the information relevant to current scholarly discussions on the topic? Do scholars refer to this source?
Authority: the source of the information	• Is the author/sponsor clearly identified? Is contact information easy to find? • What are the author's credentials? Is the author knowledgeable in his or her field (based on employment, publications, or sponsorship by reputable organizations)? • Has the author published works in traditional formats? (Look up the author in Google Scholar.) • Is the author affiliated with an organization? Does this organization appear to support or sponsor the page? (Google the authors and/or sponsoring organizations.) • What does the sponsoring site (e.g., www.noaa.gov (http://www.noaa.gov), www.uiowa.edu (http://www.uiowa.edu)) and domain name (e.g., .com, .edu, .gov, .org, .net) reveal about the source of the information, if anything?
Accuracy: the reliability, truthfulness, and correctness of the content	• Where does the information come from? Can you verify any of the information in independent sources or from your own knowledge? • Are the original sources of information listed? • What evidence is presented to support claims made? • Has the information been reviewed or refereed? • Does the language or tone seem objective and unbiased? • Is the information free of spelling, grammar, and typographical errors?
Purpose: the reason for the website's existence	• Is the purpose of the page stated? Is the purpose to: inform? teach? entertain? enlighten? sell? persuade? Are possible biases clearly stated? • Is advertising content versus informational content easily distinguishable? • Are editorials/opinion pieces clearly labeled?

4.4 Journal Articles and the Peer Review System

Journal articles are perhaps the most important communication mode for both social justice and criminal justice research. Journals have a more timely publication frequency, can reach large numbers of people, have a rigorous acceptance and publication process, and are a well-established means of information distribution. It is important that social and criminal justice students become familiar with journal articles and their format, as journal articles will likely provide a significant amount of research material. For some tips, see *Tips & Tools: How to Read a Journal Article*.



Tips & Tools: How to Read a Journal Article

Social psychologists Christian Jordan and Mark Zanna (1999) wrote a book chapter about how to read a journal article, and although their emphasis was on how to read journal articles in social psychology, their advice is applicable to social and criminal justice as well.

When approaching a journal article for the first time, and often on subsequent occasions, most people try to digest it as they would any piece of prose. They start at the beginning and read word for word, until eventually, they arrive at the end, perhaps a little bewildered, but with a vague sense of relief. This is not an altogether terrible strategy; journal articles do have a logical structure that lends itself to this sort of reading. There are, however, more efficient approaches—approaches that enable you . . . to cut through peripheral details, avoid sophisticated statistics with which you may not be familiar, and focus on the central ideas in an article. Arming yourself with a little foreknowledge of what is contained in journal articles, as well as some practical advice on how to read them, should help you read journal articles more efficiently. (p. 461)

Reading and extracting information from journal articles is an acquired skill, and like all skills, it takes time and practice to perfect it. In order to practice this skill development, Jordan and Zanna (1999) offered these tips for reading the major sections of research articles:

INTRODUCTION (Try to answer these questions when reading an introduction section.)

- What was the problem studied, and why was it studied?
- How did this study go beyond previous studies of this same problem?
- How did the researchers arrive at their hypotheses?
- What questions do the researchers hope to answer by the study's conclusion?

METHOD (Try to answer these questions when reading a methods section.)

- How were the hypotheses translated into testable questions?
- How were the variables manipulated and/or measured?
- Did the measures of the variables accurately represent the actual variables of interest?

RESULTS (Try to answer these questions when reading a results section.)

- Did the researchers provide evidence that the independent variables worked?
- What were the major outcomes of the study?
- Were the researchers' hypotheses supported by the results of the study?
- Did the researchers explain the findings that did occur (regardless of hypotheses)?

DISCUSSION (Try to answer these questions when reading a discussion section.)

- What conclusions can be drawn from the study?
- What new insights are now available about this topic because of these research findings?
- Did this study help fill the previous knowledge gap about the topic?
- What are the practical implications of these results?
- Did the results contradict previous findings, and if so, why?

Journal articles are a key means of communication for researchers in social and criminal justice. Because criminal justice is such a vast area of study with the four major fields, and social justice encompasses the main principles of equality, solidarity, and human rights, as researchers, professors and students alike rely on journal articles to provide the most up-to-date information on all topics and issues. Since social and criminal justice research focuses mostly on a particular aspect of human behavior (i.e., criminal behavior), journal articles are invaluable for advancing knowledge of crimes and criminal behaviors, as they provide guidance and insight for future research.

Journals in social and criminal justice operate under a **peer review system** in which several professionals review article submissions before an acceptance decision is made. A criminologist who wants to professionally publish the results of her or his research starts by selecting a journal and sending the manuscript to the journal editor. The journal editor will send copies of the manuscript to criminal justice professionals, both academics and practitioners, for review. Thus the peer review process begins, as the journal editor asks the author's peers in the field to review the manuscript and decide whether it is suitable for publication. The peers are also called referees, thus a "refereed journal" means the journal follows this peer review process.

An important note to students is that this process differs from submission of a manuscript to a popular magazine. Magazines pay people to write articles; authors of journal articles are not paid and may sometimes help defray the cost of journal publishing. Whereas magazine articles may be checked for accuracy, they do not undergo the same scrutiny, examination, and review as journal articles. The majority of journal articles are well documented with supporting references that note when an idea has been adopted from another source. A magazine article is rarely as extensive in documenting the academic and scholarly work of the author. The distinction between journals and magazines is an important factor, especially when students are determining the credibility and reliability of the information. For some excellent guidelines for understanding the difference between a scholarly journal article and a popular magazine article, see Table 4.5.

Table 4.5: Differences between magazine and journal articles

Characteristic	Popular magazine article	Scholarly journal article
Length	Shorter articles, broad overview of topics	Longer articles providing in-depth analysis of topics
Authorship	Author is often a staff writer or journalist; sometimes name and credentials are not provided	Author (or authors) is usually an expert or specialist in the field, with name and credentials always provided
Language and audience	Written in a nontechnical language for anyone to understand	Written in the jargon of the field for scholarly readers (professors, researchers, students)
Format and structure	Articles do not necessarily follow a specific format or structure	Articles are usually very structured, with abstract, introduction, method, results, discussion, references
Special features	Illustrations with glossy or color photographs, usually for advertising purposes	Illustrations that support the textual presentation, statistical tables, graphics
Editors	Articles are not evaluated by experts but by editors on staff	Articles are reviewed and critically evaluated by experts in the field (called peer reviewers or referees)
Credits	A bibliography is usually not provided, although names of reports or references may be mentioned in the text	A reference section is always provided to document research sources thoroughly

University of Texas at San Antonio Library, 2007.

Research in social and criminal justice encompasses the various fields in criminal justice—law enforcement, courts, corrections, and juvenile justice—as well as the major principles of equality, solidarity, and human rights of social justice. Within each of these areas there are specialties and subspecialties, demonstrating the potential depth of any one particular area. One challenge for students is to achieve a breadth (broad approach) of the topic, while also establishing a depth (narrow approach) of the topic. An effective literature review, which includes identifying past research on the topic that can provide insight for future research, is essential to answering the research question. Evaluation of online information, regardless of source, should involve the investigation of the currency, relevance, authority, accuracy, and purpose of the information available (the CRAAP test). The process of reviewing the literature can be enhanced when a research question is clearly defined, which can drive and inform the various search strategies that are employed. By gaining the skills and confidence to navigate online databases, including the use of advanced features, students in social and criminal justice will acquire valuable skills that will serve them well beyond graduation.

- In locating resources, what are some options for finding literature online? How can Ashford University's team of librarians help in locating resources? What is the process for treeing?
- What is the difference between a broad approach and a narrow approach to a research topic? How does the approach influence the types of journals you would research for your project?
- Why is evaluating the credibility of a source important? Why are relevancy, currency, and accuracy important?
- Why are journal articles important for communicating in social and criminal justice research? What is a peer review, and why is it important for academic journal articles?

secondary source

An article or source about original research that was not written by the individual person who completed the research.

treeing

A technique by which a student or researcher examines the references section of an article to determine whether some of the sources cited might also be of value as part of his or her current research project.

Chapter 5



How to Critique a Journal Article

Hill Street Studios/Blend Images/Getty Images**Learning Objectives**

After reading this chapter, you should be able to:

- Critique a journal article, using the holistic critique and the question-and-answer critique methods as possible organizational schemes.
- Explain how journal article critiquing falls within the higher-level inquiry skills of analysis, evaluation, and creation.
- Evaluate whether the data collected in a particular study appropriately match with the author's conclusions.
- Comprehend the basic concepts necessary to be a savvy research consumer, appreciating the role of critical thinking skills and their application to daily life.

In the previous chapter, we focused on the search for relevant sources related to the topic of study. A student may be searching far and wide for information to include in a research project, but once a student has located that information and confirmed its validity, what's next? At this point, the student will begin a careful review of the sources and determine whether the evidence is worth including in the research project; that is, a **critique**, or critical evaluation, of the retrieved information is conducted. In this chapter, the focus is the criminal justice journal article, simply because journal articles provide students with the most significant material for their research projects. However, many of the critical analysis techniques discussed are also applicable to books, websites, government reports, etc. The ability to analyze information is needed in numerous situations. For example, an individual wishing to purchase a home or a new car will need to critically evaluate all of the information provided by the bank or lender to make an informed and intelligent decision on which mortgage or loan provides the best options and opportunity for purchase. As such, the ability to critique information has applications well beyond the classroom, making it a valuable lifelong skill.

5.1 Evaluating Journal Articles: The Big Picture

Students must be able to critically evaluate others' work for their research projects. In addition, the ability to critique is a useful lifelong skill, as it promotes the ability to think critically and analytically in everyday situations. Thus, critiquing is a skill that all students should practice regularly.

Critiquing a journal article is different from simply reading a journal article, as described in Chapter 4. A student can read a journal article just to extract ideas or to better understand the topic being studied. A journal article critique, however, is a deeper analysis, whereby the student is prompted to think about possible improvements or flaws to the study that must be considered in the context of the research question.

Understanding the anatomy of a journal article can help students organize the critique of the article. Table 5.1 provides a brief description of the typical anatomy of a research-based journal article.

Table 5.1: Anatomy of the journal article (how the author writes the article)

Title page (take credit)	• Author's name • Author's affiliation • Running head information
Abstract (quick summary)	• Usually 120–150 words • May include keywords • Some articles will not include an abstract
Introduction (what was being studied)	• Introduces the problem • Develops the background • States the purpose and rationale for the present study
Method (how was the study conducted)	• Participants • Apparatus or materials • Procedure • Enough detail for reader to replicate if desired
Results (what happened in the study)	• Tables and/or figures if necessary • Presentation of statistical outcomes • No interpretation, just presentation
Discussion (what do the results mean)	• Was there support for the research idea? • Did the study help resolve the original problem? • What conclusions can be drawn? • Suggests improvements, avenues for further/new research
Reference page (give credit where credit is due)	• Starts on its own page • Lists authors alphabetically by last name of first author • No first names used • Shows author's scholarly ability and how she or he did her or his homework

Students must also understand the difference between conducting a critique and criticizing another's work. Criticizing can be relatively easy; simply point out errors and what the author did wrong. However, the goal of a critique is to analyze and evaluate the work on multiple dimensions to determine the impact it has on criminal justice. By conducting a scholarly critique, a student should be able to provide examples of positive contributions and provide critical criticisms that point to gaps in the research or in the author's conclusions of the data (Academic Skills and Learning Centre, 2009). Journal articles, and the connections we make between journal articles, provide the foundation for criminal justice research. Cumulative understanding about criminal justice and crime is developed one study at a time.

There are several effective methods for critiquing a criminal justice journal article, which are discussed in more detail later in this section. Regardless of which method a student chooses, any criminal justice journal article critique has three main sections:

1. the identification of the author and the formal citation of the source (as it would appear in a references section);
2. a summary of the main points of the article; and
3. the analysis and evaluation (the "critique") of the article, which is typically the bulk of the document (Center for Teaching and Learning, 2009).

The identification of these three sections provides a nice organizational structure for a journal article critique, with the major detailed analysis provided in the third section. Students should also note that most of the points raised in a journal article critique center on the keys for evaluating sources discussed in Chapter 4: authorship, expertise, currency, accuracy, and corroboration. Another method that provides a more holistic (general) approach can also be used as a critique strategy.

The Holistic Critique Method

An effective approach to conducting a journal article critique, which provides an overall, global assessment of the article, is the **holistic critique** method (Pyrzczak, 2008). This method is similar to a global assessment performed when the journal article was selected for possible inclusion in the research paper. In the holistic critique method, the student should focus on the following questions for each journal article (from Pyrczak, 2008, pp. 129–133). (See *Writing in Action: Sample of a Holistic Critique* for a specific example.)

1. Has the researcher(s) selected an important problem? Based upon the student's learning and knowledge, he or she should be able to identify whether the article discusses an important problem in social and criminal justice, something that impacts a large segment of social and criminal justice.
2. Was the researcher(s) reflective? The student should evaluate whether a comprehensive critique and literature review of prior studies was provided, to show the researcher(s)'s depth of knowledge.
3. Is the report cohesive? The student should be able to easily understand the material if it is written in a clear and concise manner. Also, tables and figures should be easy to understand.
4. Does the report extend the boundaries of the knowledge on a topic, especially for understanding relevant theories? The student should look for information that provides a new assessment or view of the topic, most likely found in the analysis/discussion/conclusion sections of the article.
5. Are any major methodological flaws unavoidable or forgivable? The student should be able to identify flaws or errors in the research methodology and be able to determine whether these flaws or errors have a significantly negative impact on the data.
6. Is the research likely to inspire additional research? The student should determine whether others would be interested in conducting similar research. In other words, is this research, and the information provided in the article, worthy of continued study?
7. Is the research likely to help in decision making? The student should determine whether the research can be used by social and criminal justice personnel in making decisions.
8. All things considered, is the report worthy of publication in an academic journal? After the critique, the student should be able to determine whether this study was worthy of publication, being available to anyone interested in the topic.
9. Would you be proud to have your name on the research article as a coauthor? Based on the overall critique of the article, the student can decide whether he or she would like to have worked on the study and been counted as a coauthor.



The holistic critique is a method used to globally evaluate the merits of a journal article.



Article Critiqued: *Sleep Disorders, Health, and Safety in Police Officers*

APA Citation/Reference:

Rajaratnam, S. M. W., Barger, L. K., Lockley, S. W., Shea, S. A., Wang, W., Landrigan, C. P., . . . Czeisler, C. A. (2011). Sleep disorders, health, and safety in police officers. *Journal of the American Medical Association*, 306(23). Retrieved from: <http://jama.jamanetwork.com/article.aspx?articleid=1104746> (<http://jama.jamanetwork.com/article.aspx?articleid=1104746>)

Have the Researchers Selected an Important Problem?

Yes. These researchers addressed sleep disorders and the effect they have on police officers' health and the risk posed to the public. Specifically, the researchers set out to address the associations between sleep disorder risk and self-reported health, safety, and performance outcomes in police officers. Knowing how sleep disorders affect the job performance of police officers would be valuable to police administrators and officers, as safety on the job is paramount for officers and the communities they serve.

Were the Researchers Reflective?

The researchers were reflective, but with little prior research on the effects of sleep disorders on job performance of police officers, there was not an extensive review of the literature. The researchers noted that "to date, the effect of sleep disorders on police officer health, safety, and performance has not been systematically investigated" (Rajaratnam, et al., 2011, para. 8).

Is the Report Cohesive?

Yes. The report follows the typical anatomy of a research report, with the major sections of introduction, method, results, and discussion. Although there are numerous tables and charts, they are relatively easy to comprehend and provide a good pictorial of the information and support the researchers' discussion of results.

Does the Report Extend the Boundaries of the Knowledge on a Topic, Especially for Understanding Relevant Theories?

The researchers tackle a little-studied topic and advance the topic through their use of longitudinal research techniques. It was hypothesized that fatigue, related to duration and quality of sleep as well as to untreated sleep disorders, plays a role in unintentional injuries and fatalities of police officers. Understanding the role of sleep disorders for police officers will make a tremendous impact on the field of law enforcement.

Are any Major Methodological Flaws Unavoidable or Forgivable?

There were no major methodological flaws. The researchers used standard methodological techniques, which included both online and on-site study components. The substantial case study data available ($N = 4,957$ sworn police officers) provided for appropriate statistical techniques, and the conclusions drawn represent the data collected.

Is the Research Likely to Inspire Additional Research?

Yes. This is an important criminal justice issue, and understanding the role that sleep disorders have on police job performance is an expanding area in need of future research. Sleep disorders are common but mostly undiagnosed, and if they remain untreated, significant negative consequences in all aspects of police work can result, including adverse health and safety issues. Understanding how sleep affects individuals who work on rotating shifts, which can result in such problems as chronic sleep deficiency, can assist in developing training and education for police officers to identify potential problems before they exist. These results can also prompt further research to help expand the little research that currently exists.

Is the Research Likely to Help in Decision Making?

Yes. The findings in this study are most valuable to police administrators, as they are the ones making decisions on police officer shifts and determining the appropriate work hours to ensure maximum job performance while maintaining the health and safety of officers.

All Things Considered, Is the Report Worthy of Publication in an Academic Journal?

Yes, absolutely. This is important research; the methodology presented is important for future researchers, and the results are important for police officers, police administrators, and policy makers on the state, local, and federal levels.

Would You be Proud to Have Your Name on the Research Article as a Coauthor?

Absolutely, yes.

The Question-and-Answer Critique Method

A student seeking advice about how to critique a criminal justice journal article would find many sources that offer long listings of key questions to ask while reviewing and critiquing an article. Using a detailed list of questions for the critique is known as the **question-and-answer critique** method. Listings from various sources (such as those found in GPRC, n.d.; Salkind, 2009; and Center for Teaching and Learning, 2009) share common characteristics and can be categorized into topic sections based on the focus of each specific question. This method can be considered a more detailed approach than the holistic critique method presented previously. However, there is no one specific set of questions to ask, and as students gain experience in critiquing journal articles, the list of detailed questions can be expanded. Table 5.2 presents a good example of a detailed set of questions students can use to critique a criminal justice journal article.

Table 5.2: Question-and-answer critique questions sorted by topic

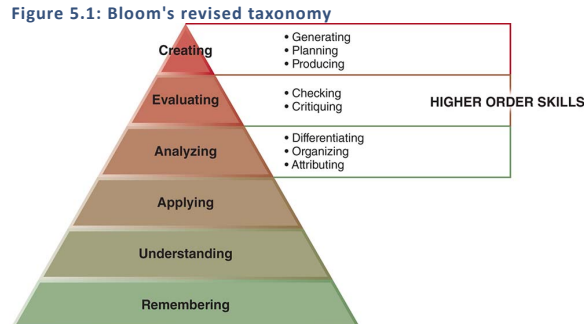
Review of the existing literature	
1.	Is there a theoretical perspective being following here? If so, which perspective?
2.	Was the author correct in his or her interpretation of others' work?
3.	Has the author cited the pertinent references necessary?
4.	How closely was the literature cited in the journal article actually related to the previous literature? Was is a good match or mismatch?
5.	Is it an up-to-date literature review?
6.	Are there any classic or seminal research works that should have been included in the literature review but were left out?
Problem and purpose of the study	
7.	Briefly describe the topic of the journal article, which is usually described in its title.
8.	Identify the important concepts the author presents.
9.	What are the author's underlying assumptions that may influence the study's outcomes?
10.	Can you understand the statement of purpose of the study?
11.	Is there a rationale that explains why the study's outcomes would make an important contribution to the published literature?

Thesis statement or hypothesis	
12.	Are the key concepts clearly defined and explained?
13.	What is the thesis of the work presented in the journal article?
14.	Did the author's approach to supporting or refuting the thesis make sense?
15.	Can the hypothesis or hypotheses presented actually be tested?
16.	Do the hypotheses state a clear, expected association between the variables under study?
17.	Are the hypotheses grounded in theory or as part of a review of relevant literature?
Methodology, including sample	
18.	What was the author's general method for drawing conclusions about this topic? Was this an empirical study?
19.	What was the author's method of collecting data? Qualitative, quantitative, or both?
20.	Is there a clear rationale provided for how the key questions of interest can be adequately addressed by the research methodology utilized?
21.	Are the research methods adequately described to the extent that another researcher could replicate this research study?
22.	How large or representative was the sample that was used?
23.	Are independent and dependent variables clearly defined, or at least clearly identifiable?
24.	Is it clear how the study was conducted—that is, the participants selected, the materials used, and procedures followed throughout the study?
25.	Was the sample selected such that you believe it to be representative of the greater population of interest?
26.	How similar are the participants selected here to participants utilized for past studies?
Analyses and results	
27.	Are the statistical calculations used appropriate and correct?
28.	Did you discover any errors in the analyses selected?
29.	Were the results reported fairly and accurately?
30.	Are the results reported relatable to the hypotheses being tested?
Discussion, conclusion, and interpretations	
31.	Do the data analytic outcomes support the assertions made by the author?
32.	Which results are the most thought provoking?
33.	Are limitations to the study mentioned, and are they reasonable and plausible limitations?
34.	Does the author make suggestions for future research? What are the unanswered questions?
35.	Did the author draw appropriate generalizations?
36.	Did the author present any counter-evidence or alternative explanations for the data collected or conclusions drawn from this research?
37.	Does the discussion provide closure regarding the initial hypotheses presented earlier in the journal article?
38.	What would you do to improve this research?
39.	What are the primary implications of these research outcomes?
References	
40.	Are the references recent and relevant?
41.	Are the references properly formatted and complete?
42.	Does the list of references reflect the most important reference sources available in the field currently?
43.	Is there enough information provided in each reference such that the reader can retrace the exploratory steps of the author and locate the original source information?
General comments	
44.	Provide the full citation of the journal article being critiqued.
45.	Is the title of the article understandable?
46.	Is the abstract correctly formatted and helpful?
47.	Did you come away with at least one big-picture, take-home message?
48.	Is the overall writing style clear and understandable? Is the writing style appropriate for the audience?
49.	Does the author strive for neutrality and objectivity in word choice, or is the language selected emotionally charged and biased?
50.	Do you agree or disagree with the author's conclusions about the topic? Why?
51.	What are the strengths and weaknesses of the research presented in the journal article?

Note that as with the holistic critique approach, students can utilize many of the items presented in Table 5.2 as an evaluative checklist for their own as well as others' writing.

5.2 Higher-Order Inquiry Skills

The ability to critique a journal article is a specialty version of a higher-order skill known as evaluation. The notion of higher-order (and lower-order) skills became popularized due to Benjamin Bloom's (1956) work on the *taxonomy*, or classification, of functions in the cognitive domain (mental skills used to acquire knowledge—intellect). Taxonomy is an organizational scheme arranged in a hierarchy from less to more complex and is based on information and knowledge that educators want students to master. Bloom organized his taxonomy into six levels, which are successive, meaning each level must be mastered before moving to the next highest level. His original six cognitive levels (from lower-order to higher-order) were knowledge, comprehension, application, analysis, synthesis, and evaluation. In a revised taxonomy presented by Anderson & Krathwohl (2001), colleagues of Bloom, the six levels of cognitive processes (from lower-order to higher-order) were amended and termed remembering, understanding, applying, analyzing, evaluating, and creating.



College students in particular are pressed to obtain the three higher-order skills, which include the process of critiquing journal articles. "Within a critique, students analyze the article's clarity, organization, purpose, research methodology, findings, and recommendations," while "a literature review demands expansion of the understanding of several articles into knowledge, application, analysis, synthesis, and evaluation of ideas" (Harris, 2006). In other words, understanding and composing an effective critique of a journal article, or other scholarly work, "provides the foundation for improved scholarly writing and enhances students' critical thinking abilities" (Harris, 2006). The following is a brief description of the three higher-order inquiry skills.

Analyzing

Analyzing "involves breaking material down into its constituent parts and determining how the parts are related to one another and to an overall structure" (Anderson & Krathwohl, 2001, p. 79). The specific subprocesses include the abilities to differentiate, organize, and attribute. In the revised cognitive taxonomy, analysis is frequently grouped in a trio of processes: understand, analyze, and evaluate. When a student is asked to perform an analysis, that task may be to separate fact from fiction, to make an argument and support it with a citation in APA format, to distinguish between evidence that is empirically based versus anecdotal, to uncover the relationship between ideas or behaviors, and so on. Both the holistic and question-and-answer critique methods provide students with analyzing skills.

Evaluating

Evaluating "is defined as making judgments based on criteria and standards. The criteria most often used are quality, effectiveness, efficiency, and consistency" (Anderson & Krathwohl, 2001, p. 83). The key processes applied with evaluating are checking and critiquing. Checking involves an examination of facts presented so that there are minimal inconsistencies. For example, a statement made in a student's introduction section/review of the literature does not contradict with a statement made on a similar topic in the discussion/conclusion section of the same paper. Critiquing is one's ability to make judgments about others' work based on a specific set of stated criteria, and it takes practice to develop the expertise to effectively evaluate based on those criteria. For example, a correctional officer is promoted to assistant warden, an administrative position in which he is responsible for conducting annual performance evaluations of all correctional officers in the prison. Although the evaluation process may be unclear or confusing at first, the assistant warden's ability to effectively evaluate officer performance should improve over time and with practice.

Creating

Creating "involves putting elements together to form a coherent or functional whole" (Anderson & Krathwohl, 2001, p. 84). The processes associated within the creation level include generating, planning, and producing. As students write papers of various sorts throughout college, the process of creation is evident. For example, for the capstone criminal justice research paper, each student is generating a list of sources to critique, planning the presentation style of the material to be written, and producing written work that conforms to APA format. In Bloom's revised taxonomy, creation is the highest level within the cognitive domain and requires the coordination and competency in all the levels leading to it—remembering, understanding, applying, analyzing, and evaluating. In other words, the different levels within the cognitive domain are different types of tasks and skills that require different levels of competency and practice in order to achieve expertise.

5.3 Do the Conclusions Match the Data Collected?

The focus of a criminal justice journal article critique is to evaluate the merits of the research, which in turn determine the merits of the conclusions and outcomes of that research. Along with identifying an appropriate critiquing method and using a higher-order level of cognitive reasoning in the critique, students must also determine whether the data collected by the research appropriately match the conclusions drawn by the researcher(s). For example, has the researcher drawn appropriate conclusions from the data obtained, or do the conclusions overreach the study? Is the cause-and-effect relationship language used in the journal article supported by the research design and statistical data results? This level of analysis, like the other evaluative tasks of critiquing a journal article, will require time and practice to acquire and master.

Causality in Research Studies



Martin Barraud/OJO Images/Getty Images

Understanding causality, or how one thing causes a change in something else, is an important part of deciding how to promote or prevent certain outcomes.

For many criminologists, the most powerful conclusion that can be made in research is a **cause-and-effect conclusion**. In theory, if we are able to determine causality (one thing causing a change in something else), then we can make positive outcomes occur more often and work to prevent negative outcomes from happening as often. For example, it would be beneficial to know what causes college student success, what causes happiness, and what causes job satisfaction, so that we could promote those causes and help individuals strive for goals they wish to achieve. In criminal justice, it would be beneficial to know what causes rape, what causes underage drinking, what causes armed robbery, what causes domestic violence, and what causes suicide by police officers, so that practitioners and criminal justice personnel could work to prevent antecedent (before the fact) causes that lead to these negative outcomes.

In determining causality, very precise methodology must be used to provide a high level of confidence about the determination, and with this methodology come different categories of research questions. Meltzoff (1998) provides a description of various types of research questions. Table 5.3 summarizes Meltzoff's (1998) descriptions, using generic statements, while also adding realistic examples. If the journal article is written with enough clarity, a student should be able to place it in one of the types of research questions identified in Table 5.3.

Table 5.3: Types of research questions, with examples

Types of research questions	Generic example	Specific example
Existence questions	Does x exist?	Can people have a drug addiction? Does pedophilia exist?
Questions of description and classification	What is x like? To what extent does x exist?	What are the best measures to prevent gang violence? What is it like to be a victim of crime? To what extent are inmates controlling prisons?
Questions of composition	What are the components that make up x? What are the factors that comprise x?	What variables lead to using illegal drugs? What are the leading indicators that someone is a child molester?
Statistical relationship questions	Is there an association or relationship between x and y?	Is one's age related to interest in pornography? Is there an association between alcohol and domestic violence?
Descriptive–Comparative questions	Is Group x different from Group y?	Are males or females more likely to engage in underage drinking? Do one- or two-parent homes have more juvenile delinquency?
Causality questions	Does x cause, lead to, or prevent changes in y?	Does psychotherapy help individuals with dissociative identity disorder? Does attending DUI school lead to less drunk driving?
Causality–Comparative questions	Does x cause more of a change in y than z does?	Does the death penalty provide more feelings of justice for victims than life in prison? Is medical maintenance better at dealing with drug addiction than detoxification?
Causality–Comparative interaction questions	Does x cause more change in y than does z under certain conditions, but not under other conditions?	Are males raised in urban areas more likely to engage in sexual deviance, but not females raised in urban areas? Are children in elementary school more likely to remain drug-free than middle school children, but only for elementary school children who attended a D.A.R.E. program?

Adapted in part from Meltzoff (1998)

For many criminologists, the ultimate goal is the determination of causality (e.g., understanding cause-and-effect relationships). However, obtaining data that show a significant positive correlation between two variables does not necessarily mean that causality can be inferred. Burns (1997) identified three criteria for establishing causality. First, there must be clear **temporal precedence**. That is, for the cause to be the cause, and the effect to be the effect, the cause must come first, and the effect must come second. If both cause and effect occur simultaneously, then we cannot know the cause or the effect. There must be a clear time sequence. Second, measures of cause and effect must covary, or exhibit **covariation**. That is, if there is a cause-and-effect relationship, the presentation of the cause needs to yield the effect, but if there is no presentation of the cause, then there should be no effect. In other words, if the nature of the cause is changed, then the nature of the effect should also change. Third, there should be no **plausible alternative explanation**. If we have adequately applied our research methods, experimental controls, methodological designs, and so forth, then we need to say, with confidence, that there is no other logical explanation for the effect other than the cause. Note that we do not say that we *proved* that the cause is the reason for the effect, but we infer the relationship when we have (a) temporal precedence, (b) covariation, and (c) no plausible alternative explanations (Burns, 1997). Technically speaking, we do not "prove" anything in criminal justice research.

Scientific Experiments: Cause and Effect

Experiments containing one independent and a dependant variable can be used to determine cause and effect.

Critical Thinking Questions

- Why must there be only one independent variable in an experiment which aims at determining cause and effect?
- Can you think of any instances where measuring two variables at once could be appropriate or beneficial?

Concerns About Nonscientific Evidence

In drawing conclusions, the quality of evidence and type of data are critical factors. For example, the type or kind of evidence relates to the type or kind of conclusions possible. Evidence gathered through the methods and processes of scientific research often holds special characteristics that nonscientific evidence does not possess. For example, religious or political affiliations, and other nonscientific research, may not go through a rigorous peer-review process, resulting in articles that could include slanted or biased reporting of the evidence. Bell (2005) identified and summarized some of the problems that can occur when nonscientific evidence is used (p. 38):

- An example (one observation) or the observations from a few people may be used as evidence. However, it may not be clear who actually made the observations and under what conditions.
- The observations are not repeated and carefully checked. Thus, a fluke occurrence could prematurely be accepted as fact.
- Observations are not written down as they occur but are recalled at some later date. Given the fallibility of memory, a specified procedure for reliably recording data is highly desired.
- The people being observed, usually those who are available, are rarely representative of a larger population. Representative samples in criminal justice research are critical to be able to generalize results beyond the individuals studied or tested.
- Important terms are not precisely defined and sometimes the definitions of key terms change. Disagreement about the meaning of key terms might mean that researchers who think they are studying the same topics/constructs are not studying the same phenomenon at all.
- A comparison group or comparison condition is rarely available. A hallmark of the scientific approach is the comparison of the treatment group to the control group, whenever possible.
- Control over important variables is impossible. It is very difficult to keep constant the relevant factors to be able to state a specific cause. Subtle factors can be overlooked.
- All of the evidence is not used. Evidence that is contrary to a statement is overlooked, or only part of the evidence is used.
- Some writers have biases that interfere with objective observation and make it difficult to separate evidence from opinions and value judgments. By relying on scholarly peer review in the publication of journal articles, subjective conclusions and the chances of fraud are minimized.

This is not to say that scientific research and its resulting evidence do not have the potential for flaws, but when developed research methods and peer review procedures are utilized, this ensures the conclusions drawn from research data are appropriate and fair. This is important for answering the question of whether the conclusions drawn match the data collected from the research. As noted previously, mastering the skill of determining whether appropriate conclusions were drawn from the research data takes time and practice. However, the benefits from this systematic approach are numerous. Having a specific method for making decisions in scientific research allows individuals to avoid making decisions about people or behaviors based on opinions or biases.

5.4 Being the Savvy Consumer of Research

Criminologists and students alike need to be savvy, or knowledgeable, consumers of research. As such, they must be aware of potential hazards associated with certain types of research and research findings in order to (a) avoid making fallacious claims based on their own work, and (b) identify false claims made by others to avoid being duped or misled. By developing a honed sense of critiquing, students can expand their evaluations beyond the journal article critique and can utilize them to assess any type of research finding or claim. Some of the potential hazards that should be recognized involve the appearance of *illusory correlations* and the natural bias to believe what one wants to believe. Being a good researcher (generating research) or a knowledgeable consumer of research (reading research) necessitates a fair measure of quantitative reasoning skills. The following sections provide some specific examples of types of potential hazards.



(iStockphoto/Thinkstock)

Hazards are associated with certain types of research, so students must be aware of these potential hazards in order to avoid conveying inaccurate information.

Illusory Correlations and Confirmation Biases

Illusory correlation and confirmation bias are two ways that common sense can mislead us in evaluations or critiques. An **illusory correlation** is our tendency to believe that two variables are related when they are not. For example, a student is convinced that her favorite sports team wins only when she watches. However, if she were to gather the data and look at her team's win-loss record when she watches and when she does not watch, she is likely to find that her presence is not a deciding factor. Or perhaps she regularly reads the horoscope and uses this information to guide her behavior. One horoscope on www.astrology.com (<http://www.astrology.com/>) stated, "A big improvement is in the works, one that you may know nothing about, and today is the day for the big unveiling." If this student is about to graduate and is currently seeking employment, spotting some new listings for interesting positions may convince her that the horoscope was right. When individuals look for an association, they often find it. Yet, over and over again, careful researchers fail to find evidence to support the accuracy of astrology (see Dean & Kelly, 2003). To avoid this, using quantitative reasoning (i.e., statistical numbers) helps individuals to see past illusory correlations.

A **confirmation bias** is our tendency to "see" evidence that fits with our beliefs and to ignore evidence that does not fit with our beliefs. This tendency is the main reason that we "see" illusory correlations. From the previous example, if the student believes that watching her favorite sports team contributes to that team's success, then she will become aware of the times that she watched and they won and the times that she did not watch and they lost. However, what happens with her confirmation bias is that she underestimates the number of times that she watched and they lost or that she did not watch and they won. In the second example, when using horoscopes to guide behavior, many individuals remember when their horoscopes had an uncanny prediction—for example, the prediction of a problem in love on the exact day of the breakup of a romantic relationship. To illustrate confirmation bias, Munro and Munro (2000) showed that more students reported accurate predictions for their particular astrological sign when those signs were presented along with the predictions. In the report, 34% of students chose their own horoscope as the best match for them when the horoscopes were labeled with the signs of the zodiac, whereas only 13% chose their own horoscope when they were labeled only with numbers and in a random order. In another example, it is well documented that driving while trying to operate a cell phone is a dangerous distraction, yet growing numbers of drivers are calling and texting while driving (Richtel, 2009). Confirmation bias can help explain this trend, in that people believe they are such good drivers that they can avoid accidents while using their cell phones. However, this illusion has the potential to create hazardous and perhaps deadly consequences. Oftentimes we know the right thing to do, yet we ignore the information.

Coincidence and Probability



(Michael Blann/Photodisc/Thinkstock)

Unlike coincidence, probability has a scientific basis and is determined by quantitative reasoning.

When attempting to understand and predict human behavior, it is helpful to know about coincidence and probability. When criminologists understand the logic that underlies the occurrence of behaviors and events, this helps them to make more accurate predictions about future behaviors.

Coincidence is when two *random* events occur close in time to one another, which leads us to think the events are connected in some way. A person might observe that every time he attends court as an observer, the judge gives each defendant the maximum sentence. Therefore, he concludes that his presence has an effect on the judge's sentencing decisions. In fact, our belief in coincidences leads to our beliefs in illusory correlations. If that pairing of events happens enough times (court attendance and maximum sentencing), one may think the events are related, rather than just a coincidence.

Probability is the concept of how frequently an event occurs compared to how often the event *could* occur. If a person flips a quarter 100 times, he or she is likely to come up with approximately 50 heads and 50 tails. Thus, the expected probability of getting "heads" on the flip of a quarter is 50 out of 100, or 0.50, meaning half the time. Quantitative reasoning shows that coincidence is without a scientific basis, while probability has a scientific basis. We can statistically determine the rate at which an event will occur, while taking into account the possibility of the event happening by chance alone (e.g., a coincidence).

When looking at a coincidence, students should be sure to examine the full context (e.g., the "background"). In order to use statistics to harness probability, consider the odds that the event will occur compared to the odds that the event could occur. Statistics *requires* that we look at the background or base rate. It prevents us from declaring something astonishing, perhaps a miracle, when it is really expected, while also preventing us from finding meaning in coincidence.

Critical Thinking and Critiquing for Everyday Life

Although quantitative reasoning is a key method in the critical thinking and critiquing processes of journal article evaluations, it can also be used in everyday life when extracting information from data. For example, if someone lost weight through a specific diet program, others who want to try the program should first find out if the results were typical. If someone suffering from an anxiety disorder hears about a new medication that is reported to be highly effective, he or she should first find statistical data on the medication and its average effectiveness. Individuals buying new cars could seek data from consumer review sites about reliability and performance of the cars in which they are interested.

When data are available, they should always be questioned. If the diet program reports a typical weight loss of 10 pounds in three weeks, an interested dieter should determine whether that is average or atypical and find out whether most people sustain the weight loss. If researchers suggest that cognitive-behavior therapy is better than anti-anxiety medication for a particular disorder, a potential patient should ask more questions. How big of an effect is this? What was the population that was studied? Do the improvements tend to last? And if the car one is hoping to buy fares well against the competition, follow-up questions should address the comparison group and whether the source is unbiased. By critiquing the data presented and by utilizing critical thinking skills, anyone can learn to become a savvy consumer of research, whether in the journal article context or in daily life.

Higher-order skills, such as analysis, evaluation, and creation, must be repeatedly practiced in order to gain both expertise and confidence in the ability to perform higher-order cognitive tasks, such as critiquing a criminal justice journal article. As students develop these skills, consistent evaluative criteria typically emerge. Research conclusions appear within a social context, even when a researcher strives to be as objective and detached as possible. In order to avoid overreaching with the results, researchers need to be careful to match the conclusions drawn with the type of data collected. That is, data collected from experimentation with random assignment may be appropriate for cause-and-effect conclusions, but correlational data are not appropriate for the determination of causality. The ability to critique the work of others is a specialized version of critical thinking, and the savvy consumer of research needs to have the abilities to apply critical thinking principles and quantitative reasoning to research outcomes as well as to everyday life situations. Developing honed critiquing skills, including the careful critique of published work, can lead to the identification of erroneous conclusions as well as educating a researcher in learning what hazards to avoid in future work.

- In the process of critiquing a journal article, what is the holistic critique method? How does this differ from the question-and-answer critique method?
- What are the higher-level skills in Bloom's taxonomy? Why is it important to acquire the skills of analysis, evaluation, and creation in order to effectively critique a journal article?
- Why is it important to determine whether the conclusions made by the author of a journal article match the statistical data collected in the study? What are some of the concerns about nonscientific evidence?
- What are illusory correlations and confirmation biases? How do these impact a critique of a journal article?

This website gives more examples of analysis, evaluation, and creation skills using Grid Analysis:
http://www.mindtools.com/pages/article/newTED_03.htm (http://www.mindtools.com/pages/article/newTED_03.htm).

This website provides more details about being a savvy consumer of research—being research-minded:
http://www.resmind.swap.ac.uk/content/06_making_sense/making_sense_index.htm (http://www.resmind.swap.ac.uk/content/06_making_sense/making_sense_index.htm)

This website provides more information about illusory correlations:
http://changingminds.org/explanations/theories/illusory_correlation.htm (http://changingminds.org/explanations/theories/illusory_correlation.htm).

Click on each key term to see the definition.

[http://content.thuzelearning.com/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_m](http://content.thuzelearning.com/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_matter/books/AUCRJ422.13.1/sections/front_m)

The third-highest level of Bloom's revised taxonomy; involves deconstructing a complex topic or object into its component parts for further study.

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The strongest type of conclusion that criminologists can reach, in which the antecedents and consequences between two actions are explicitly known and connected.

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When two random, unrelated events occur in close proximity of one another.

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A bias in which individuals tend to seek out and believe evidence that is consistent with their already-held beliefs.

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A statistical relationship between two or more variables, wherein as one variable changes, other variables change in a predictable and stable fashion.

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The highest level of Bloom's revised taxonomy; involves generating, planning, and producing an original work.

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A critical evaluation of the information at hand.

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The second-highest level of Bloom's revised taxonomy; involves determining the worthiness of an idea or object by comparing its characteristics to predetermined standards or criteria.

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A broad approach to examining the details of written work.

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The tendency to believe that two variables or events are connected in a meaningful fashion when in fact there is no connection (akin to superstition).

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In formulating hypotheses, this serves as an additional possible description of the relationships between variables in addition to the explanation the researcher hopes to support.

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The frequency of an event occurring in comparison to the frequency that an event could occur.

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temporal_precedence

The knowledge that one event specifically occurred prior to the onset of the next event.