

How to Read a Journal Article in Social Psychology

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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 that enable you, a student of social psychology, 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 effectively. If this sounds tempting, read on.

Journal articles offer a window into the inner workings of social psychology. They document how social psychologists formulate hypotheses, design empirical studies, analyze the observations they collect, and interpret their results. Journal articles also serve an invaluable archival function: They contain the full store of common and cumulative knowledge of social psychology. Having documentation of past research allows researchers to build on past findings and advance our understanding of social behavior, without pursuing avenues of investigation that have already been explored. Perhaps most importantly, a research study is never complete until its results have been shared with others, colleagues and students alike. Journal articles are a primary means of communicating research findings. As such, they can be genuinely exciting and interesting to read.

That last claim may have caught you off guard. For beginning readers, journal articles may seem anything but interesting and exciting. They may, on the contrary, appear daunting and esoteric, laden with jargon and obscured by menacing statistics. Recognizing this fact, we hope to arm you, through this paper, with the basic information you will need to read journal articles with a greater sense of comfort and perspective. Social psychologists study many fascinating topics, ranging from prejudice and discrimination, to culture, persuasion, liking and love, conformity and obedience, aggression, and the self. In our daily lives, these are issues we often struggle to understand. Social psychologists present systematic observations of, as well as a wealth of ideas about, such issues in journal articles. It would be a shame if the fascination and intrigue these topics have were lost in their translation into journal publications. We don't think they are, and by the end of this paper, hopefully you won't either.

Journal articles come in a variety of forms, including research reports, review articles, and theoretical articles. Put briefly, **a research report is a formal presentation of an original research study, or series of studies. A review article is an evaluative survey of previously published work, usually organized by a guiding theory or point of view.** The author of a review article summarizes previous investigations of a circumscribed problem, comments on what progress has been made toward its resolution, and suggests areas of the problem that require further study. **A theoretical article also evaluates past research, but focuses on the development of theories used to explain empirical findings.** Here, the author may present a new theory to explain a set of findings, or may compare and contrast a set of competing theories, suggesting why one theory might be the superior one.

This paper focuses primarily on how to read research reports, for several reasons. First, the bulk of published literature in social psychology consists of research reports. Second, the summaries presented in review articles, and the ideas set forth in theoretical articles, are built on findings presented in research reports. To get a deep understanding of how research is done in social psychology, **fluency in reading original research reports is essential.** Moreover, theoretical articles frequently report new studies that pit one theory against another, or test a novel prediction derived from a new theory. In order to appraise the validity of such theoretical contentions, a grounded understanding of basic findings is invaluable. **Finally, most research reports are written in a standard format that is likely unfamiliar to new readers.** The format of review and theoretical articles is less standardized, and more like that of textbooks and other scholarly writings, with which most readers are familiar. This is not to suggest that such articles are easier to read and comprehend than research reports; they can be quite challenging indeed. It is simply the case that, because more rules apply to the writing of research reports, more guidelines can be offered on how to read them.

The Anatomy of Research Reports

Most research reports in social psychology, and in psychology in general, are **written in a standard format prescribed by the American Psychological Association (1994).** This is a great boon to both readers and writers. It allows writers to present their ideas and findings in a clear, systematic manner. Consequently, as a reader, once you understand this format, you will not be on completely foreign ground when you approach a new research report- regardless of its specific content. **You will know where in the paper particular information is found, making it easier to locate.** No matter what your reasons for reading a research report, a firm understanding of the format in which they are written will ease your task. We discuss the format of research reports next, with some practical suggestions on how to read them. Later, we discuss how this format reflects the process of scientific investigation, illustrating how research reports have a coherent narrative structure.

TITLE AND ABSTRACT

Though you can't judge a book by its cover, you can learn a lot about a research report simply by reading its title. The title presents a concise statement of the theoretical issues investigated, and/or the variables that were studied. For example, the following title was taken almost at random from a prestigious journal in social psychology: "Sad and guilty? Affective influences on the explanation of conflict in close relationships" (Forgas, 1994, p. 56).

Just by reading the title, it can be inferred that the study investigated how emotional states change the way people explain conflict in close relationships. It also suggests that when feeling sad, people accept more personal blame for such conflicts (i.e., feel more guilty).

The abstract is also an invaluable source of information. It is a brief synopsis of the study, and packs a lot of information into 150 words or less. The abstract contains information about the problem that was investigated, how it was investigated, the major findings of the study, and hints at the theoretical and practical implications of the findings. Thus, the abstract is a useful summary of the research that provides the gist of the investigation. Reading this outline first can be very helpful, because it tells you where the report is going, and gives you a useful framework for organizing information contained in the article.

The title and abstract of a research report are like a movie preview. A movie preview highlights the important aspects of a movie's plot, and provides just enough information for one to decide whether to watch the whole movie. Just so with titles and abstracts; they highlight the key features of a research report to allow you to decide if you want to read the whole paper. And just as with movie previews, they do not give the whole story. Reading just the title and abstract is never enough to fully understand a research report.

INTRODUCTION

A research report has four main sections: introduction, method, results, and discussion. Though it is not explicitly labeled, the introduction begins the main body of a research report. Here, the researchers set the stage for the study. They present the problem under investigation, and state why it was important to study. By providing a brief review of past research and theory relevant to the central issue of investigation, the researchers place the study in an historical context and suggest how the study advances knowledge of the problem. Beginning with broad theoretical and practical considerations, the researchers delineate the rationale that led them to the specific set of hypotheses tested in the study. They also describe how they decided on their research strategy (e.g., why they chose an experiment or a correlational study).

The introduction generally begins with a broad consideration of the problem investigated. Here, the researchers want to illustrate that the problem they studied is

a real problem about which people should care. If the researchers are studying prejudice, they may cite statistics that suggest discrimination is prevalent, or describe specific cases of discrimination. Such information helps illustrate why the research is both practically and theoretically meaningful, and why you should bother reading about it. Such discussions are often quite interesting and useful. They can help you decide for yourself if the research has merit. But they may not be essential for understanding the study at hand. Read the introduction carefully, but choose judiciously what to focus on and remember. To understand a study, what you really need to understand is what the researchers' hypotheses were, and how they were derived from theory, informal observation, or intuition. Other background information may be intriguing, but may not be critical to understand what the researchers did and why they did it.

While reading the introduction, try answering these questions: What problem was studied, and why? How does this study relate to, and go beyond, past investigations of the problem? How did the researchers derive their hypotheses? What questions do the researchers hope to answer with this study?

METHOD

In the method section, the researchers translate their hypotheses into a set of specific, testable questions. Here, the researchers introduce the main characters of the study the subjects or participants-describing their characteristics (gender, age, etc.) and how many of them were involved. Then, they describe the materials (or apparatus), such as any questionnaires or special equipment, used in the study. Finally, they describe chronologically the procedures of the study; that is, how the study was conducted. Often, an overview of the research design will begin the method section. This overview provides a broad outline of the design, alerting you to what you should attend.

The method is presented in great detail so that other researchers can recreate the study to confirm (or question) its results. This degree of detail is normally not necessary to understand a study, so don't get bogged down trying to memorize the particulars of the procedures. Focus on how the independent variables were manipulated (or measured) and how the dependent variables were measured.

Measuring variables adequately is not always an easy matter. Many of the variables psychologists are interested in cannot be directly observed, so they must be inferred from participants' behavior. Happiness, for example, cannot be directly observed. Thus, researchers interested in how being happy influences people's judgments must infer happiness (or its absence) from their behavior-perhaps by asking people how happy they are, and judging their degree of happiness from their responses; perhaps by studying people's facial expressions for signs of happiness, such as smiling. Think about the measures researchers use while reading the method section. Do they

adequately reflect or capture the concepts they are meant to measure? If a measure seems odd, consider carefully how the researchers justify its use.

Oftentimes in social psychology, getting there is half the fun. In other words, how a result is obtained can be just as interesting as the result itself. Social psychologists often strive to have participants behave in a natural, spontaneous manner, while controlling enough of their environment to pinpoint the causes of their behavior. Sometimes, the major contribution of a research report is its presentation of a novel method of investigation. When this is the case, the method will be discussed in some detail in the introduction.

Participants in social psychology studies are intelligent and inquisitive people who are responsive to what happens around them. Because of this, they are not always initially told the true purpose of a study. If they were told, they might not act naturally. Thus, researchers frequently need to be creative, presenting a credible rationale for complying with procedures, without revealing the study's purpose. This rationale is known as a *cover story*, and is often an elaborate scenario. While reading the method section, try putting yourself in the shoes of a participant in the study, and ask yourself if the instructions given to participants seem sensible, realistic, and engaging. Imagining what it was like to be in the study will also help you remember the study's procedure, and aid you in interpreting the study's results.

While reading the method section, try answering these questions: How were the hypotheses translated into testable questions? How were the variables of interest manipulated and/or measured? Did the measures used adequately reflect the variables of interest? For example, is self-reported income an adequate measure of social class? Why or why not?

RESULTS

The results section describes how the observations collected were analyzed to determine whether the original hypotheses were supported. Here, the data (observations of behavior) are described, and statistical tests are presented. Because of this, the results section is often intimidating to readers who have little or no training in statistics. Wading through complex and unfamiliar statistical analyses is understandably confusing and frustrating. As a result, many students are tempted to skip over reading this section. We advise you not to do so. Empirical findings are the foundation of any science and results sections are where such findings are presented.

Take heart. Even the most prestigious researchers were once in your shoes and sympathize with you. Though space in psychology journals is limited, researchers try to strike a balance between the need to be clear and the need to be brief in describing their results. In an influential paper on how to write good research reports, Bem (1987) offered this advice to researchers:

No matter how technical or abstruse your article is in its particulars, intelligent non psychologists with no expertise in statistics or experimental design should be able to comprehend the broad outlines of what you did and why. They should understand in general terms what was learned. (p. 74)

Generally speaking, social psychologists try to practice this advice.

Most statistical analyses presented in research reports test specific hypotheses. Often, each analysis presented is preceded by a reminder of the hypothesis it is meant to test. After an analysis is presented, researchers usually provide a narrative description of the result in plain English. When the hypothesis tested by a statistical analysis is not explicitly stated, you can usually determine the hypothesis that was tested by reading this narrative description of the result, and referring back to the introduction to locate an hypothesis that corresponds to that result. After even the most complex statistical analysis, there will be a written description of what the result means conceptually. Turn your attention to these descriptions. Focus on the conceptual meaning of research findings, not on the mechanics of how they were obtained (unless you're comfortable with statistics).

Aside from statistical tests and narrative descriptions of results, results sections also frequently contain tables and graphs. These are efficient summaries of data. Even if you are not familiar with statistics, look closely at tables and graphs, and pay attention to the means or correlations presented in them. Researchers always include written descriptions of the pertinent aspects of tables and graphs. While reading these descriptions, check the tables and graphs to make sure what the researchers say accurately reflects their data. If they say there was a difference between two groups on a particular dependent measure, look at the means in the table that correspond to those two groups, and see if the means do differ as described. Occasionally, results seem to become stronger in their narrative description than an examination of the data would warrant.

Statistics can be misused. When they are, results are difficult to interpret. Having said this, a lack of statistical knowledge should not make you overly cautious while reading results sections. Though not a perfect antidote, journal articles undergo extensive review by professional researchers before publication. Thus, most misapplications of statistics are caught and corrected before an article is published. So, if you are unfamiliar with statistics, you can be reasonably confident that findings are accurately reported.

While reading the results section, try answering these questions: Did the researchers provide evidence that any independent variable manipulations were effective? For example, if testing for behavioral differences between happy and sad participants, did the researchers demonstrate that one group was in fact happier than the other? What were the major findings of the study? Were the researchers' original hypotheses supported by their observations? If not, look in the discussion section for how the researchers explain the findings that were obtained.

DISCUSSION

The discussion section frequently opens with a summary of what the study found, and an evaluation of whether the findings supported the original hypotheses. Here, the researchers evaluate the theoretical and practical implications of their results. This can be particularly interesting when the results did not work out exactly as the researchers anticipated. When such is the case, consider the researchers' explanations carefully, and see if they seem plausible to you. Often, researchers will also report any aspects of their study that limit their interpretation of its results, and suggest further research that could overcome these limitations to provide a better understanding of the problem under investigation.

Some readers find it useful to read the first few paragraphs of the discussion section before reading any other part of a research report. Like the abstract, these few paragraphs usually contain all of the main ideas of a research report: What the hypotheses were, the major findings and whether they supported the original hypotheses, and how the findings relate to past research and theory. Having this information before reading a research report can guide your reading, allowing you to focus on the specific details you need to complete your understanding of a study. The description of the results, for example, will alert you to the major variables that were studied. If they are unfamiliar to you, you can pay special attention to how they are defined in the introduction, and how they are operationalized in the method section.

After you have finished reading an article, it can also be helpful to reread the first few paragraphs of the discussion and the abstract. As noted, these two passages present highly distilled summaries of the major ideas in a research report. Just as they can help guide your reading of a report, they can also help you consolidate your understanding of a report once you have finished reading it. They provide a check on whether you have understood the main points of a report, and offer a succinct digest of the research in the authors' own words.

While reading the discussion section, try answering these questions: What conclusions can be drawn from the study? What new information does the study provide about the problem under investigation? Does the study help resolve the problem? What are the practical and theoretical implications of the study's findings? Did the results contradict past research findings? If so, how do the researchers explain this discrepancy?

Some Notes on Reports of Multiple Studies

Up to this point, we have implicitly assumed that a research report describes just one study. It is also quite common, however, for a research report to describe a series of studies of the same problem in a single article. When such is the case, each study reported will have the same basic structure (introduction, method, results, and discussion sections) that we have outlined, with the notable exception that sometimes

the results and discussion section for each study are combined. Combined "results and discussion" sections contain the same information that separate results and discussion sections normally contain. Sometimes, the authors present all their results first, and only then discuss the implications of these results, just as they would in separate results and discussion sections. Other times, however, the authors alternate between describing results and discussing their implications, as each result is presented. In either case, you should be on the lookout for the same information, as outlined above in our consideration of separate results and discussion sections.

Reports including multiple studies also differ from single study reports in that they include more general introduction and discussion sections. The general introduction, which begins the main body of a research report, is similar in essence to the introduction of a single study report. In both cases, the researchers describe the problem investigated and its practical and theoretical significance. They also demonstrate how they derived their hypotheses, and explain how their research relates to past investigations of the problem. In contrast, the separate introductions to each individual study in reports of multiple studies are usually quite brief, and focus more specifically on the logic and rationale of each particular study presented. Such introductions generally describe the methods used in the particular study, outlining how they answer questions that have not been adequately addressed by past research, including studies reported earlier in the same article.

General discussion sections parallel discussions of single studies, except on a somewhat grander scale. They present all of the information contained in discussions of single studies, but consider the implications of all the studies presented together. A general discussion section brings the main ideas of a research program into bold relief. It typically begins with a concise summary of a research program's main findings, their relation to the original hypotheses, and their practical and theoretical implications. Thus, the summaries that begin general discussion sections are counterparts of the summaries that begin discussion sections of single study reports. Each presents a digest of the research presented in an article that can serve as both an organizing framework (when read first), and as a check on how well you have understood the main points of an article (when read last).

Research Reporting as Story Telling

A research report tells the story of how a researcher or group of researchers investigated a specific problem. Thus, a research report has a linear, narrative structure with a beginning, middle, and end. In his paper on writing research reports, Bem noted that a research report:

...is shaped like an hourglass. It begins with broad general statements, progressively narrows down to the specifics of [the] study, and then broadens out again to more general considerations. (1987, p. 175)

This format roughly mirrors the process of scientific investigation, wherein researchers do the following: (1) start with a broad idea from which they formulate a narrower set of hypotheses, informed by past empirical findings (introduction); (2) design a specific set of concrete operations to test these hypotheses (method); (3) analyze the observations collected in this way, and decide if they support the original hypotheses (results); and (4) explore the broader theoretical and practical implications of the findings, and consider how they contribute to an understanding of the problem under investigation (discussion). Though these stages are somewhat arbitrary distinctions—research actually proceeds in a number of different ways—they help elucidate the inner logic of research reports.

While reading a research report, keep this linear structure in mind. Though it is difficult to remember a series of seemingly disjointed facts, when these facts are joined together in a logical, narrative structure, they become easier to comprehend and recall. Thus, always remember that a research report tells a story. It will help you to organize the information you read, and remember it later.

Describing research reports as stories is not just a convenient metaphor. Research reports are stories. Stories can be said to consist of two components: A telling of what happened, and an explanation of why it happened. It is tempting to view science as an endeavor that simply catalogues facts, but nothing is further from the truth. The goal of science, social psychology included, is to explain facts, to explain why what happened happened. Social psychology is built on the dynamic interplay of discovery and justification, the dialogue between systematic observation of relations and their theoretical explanation. Though research reports do present novel facts based on systematic observation, these facts are presented in the service of ideas. Facts in isolation are trivia. Facts tied together by an explanatory theory are science. Therein lies the story. To really understand what researchers have to say, you need consider how their explanations relate to their findings.

The Rest of the Story

There is really no such thing as research. There is only search, more search, keep on searching. (Bowering, 1988, p. 95)

Once you have read through a research report, and understand the researchers' findings and their explanations of them, the story does not end there. There is more than one interpretation for any set of findings. Different researchers often explain the same set of facts in different ways.

Let's take a moment to dispel a nasty rumor. The rumor is this: Researchers present their studies in a dispassionate manner, intending only to inform readers of their findings and their interpretation of those findings. In truth, researchers aim not only to inform readers, but also to persuade them (Sternberg, 1995). Researchers want to convince you their ideas are right. There is never only one explanation for a set of

findings. Certainly, some explanations are better than others; some fit the available data better, are more parsimonious, or require fewer questionable assumptions. The point here is that researchers are very passionate about their ideas, and want you to believe them. It's up to you to decide if you want to buy their ideas or not.

Let's compare social psychologists to salesclerks. Both social psychologists and sales-clerks want to sell you something; either their ideas, or their wares. You need to decide if you want to buy what they're selling or not-and there are potentially negative consequences for either decision. If you let a sales clerk dazzle you with a sales pitch, without thinking about it carefully, you might end up buying a substandard product that you don't really need. After having done this a few times, people tend to become cynical, steeling themselves against any and all sales pitches. This too is dangerous. If you are overly critical of sales pitches, you could end up foregoing genuinely useful products. Thus, by analogy, when you are too critical in your reading of research reports, you might dismiss, out of hand, some genuinely useful ideas-ideas that can help shed light on why people behave the way they do.

This discussion raises the important question of **how critical one should be while reading a research report.** In part, this will **depend on why one is reading the report.** If you are reading it simply to learn what the researchers have to say about a particular issue, for example, then there is usually no need to be overly critical. **If you want to use the research as a basis for planning a new study, then you should be more critical.** As you develop an understanding of psychological theory and research methods, you will also develop an ability to criticize research on many different levels. **And any piece of research can be criticized at some level.** As Jacob Cohen put it, "A successful piece of research doesn't conclusively settle an issue, it just makes some theoretical proposition to some degree more likely" (1990, p. 1311). Thus, as a consumer of research reports, you have to strike a delicate balance between being overly critical and overly accepting.

While reading a research report, at least initially, try to suspend your disbelief. Try to understand the researchers' story; that is, **try to understand the facts-the findings and how they were obtained-and the suggested explanation of those facts-the researchers' interpretation of the findings and what they mean.** Take the research to task only after you feel you understand what the authors are trying to say.

Research reports serve not only an important archival function, documenting research and its findings, but also an **invaluable stimulus function.** They can excite **other researchers to join the investigation of a particular issue, or to apply new methods or theory to a different, perhaps novel, issue.** It is this stimulus function that Elliot Aronson, an eminent social psychologist, referred to when he admitted that, in publishing a study, he hopes his colleagues will **"look at it, be stimulated by it, be provoked by it, annoyed by it, and then go ahead and do it better That's the exciting thing about science; it progresses by people taking off on one another's work"** (1995, p. 5). **Science is indeed a cumulative enterprise,** and each new study builds on what

has (or, sometimes, has not) gone before it. In this way, research articles keep social psychology vibrant.

A study can inspire new research in a number of different ways, such as: (1) it can lead one to conduct a better test of the hypotheses, trying to rule out alternative explanations of the findings; (2) it can lead one to explore the limits of the findings, to see how widely applicable they are, perhaps exploring situations to which they do not apply; (3) it can lead one to test the implications of the findings, furthering scientific investigation of the phenomenon; (4) it can inspire one to apply the findings, or a novel methodology, to a different area of investigation; and (5) it can provoke one to test the findings in the context of a specific real world problem, to see if they can shed light on it. All of these are excellent extensions of the original research, and there are, undoubtedly, other ways that research findings can spur new investigations.

The problem with being too critical, too soon, while reading research reports is that the only further research one may be willing to attempt is research of the first type: **Redoing a study better.** Sometimes this is desirable, particularly in the early stages of investigating a particular issue, when the findings are novel and perhaps unexpected. But redoing a reasonably compelling study, without extending it in any way, does little to advance our understanding of human behavior. **Although the new study might be "better," it will not be "perfect,"** so *it* would have to be run again, and again, likely never reaching a stage where it is beyond criticism. At some point, researchers have to decide that the evidence is compelling enough to warrant investigation of the last four types. It is these types of studies that most advance our knowledge of social behavior. **As you read more research reports, you will become more comfortable deciding when a study is "good enough" to move beyond it.** This is a somewhat subjective judgment, and should be made carefully.

When social psychologists write up a research report for publication, it is because they believe they have something new and exciting to communicate about social behavior. Most research reports that are submitted for publication are rejected. Thus, the reports that are eventually published are deemed pertinent not only by the researchers who wrote them, but also by the reviewers and editors of the journals in which they are published. These people, at least, believe the research reports they write and publish have something important and interesting to say. Sometimes, you'll disagree; not all journal articles are created equal, after all. But we recommend that you, at least initially, give these well-meaning social psychologists the benefit of the doubt. Look for what they're excited about. **Try to understand the authors' story, and see where it leads you.**

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REFERENCES

- American Psychological Association (1994). *Publication manual* (4th ed.). Washington, D.C.
- Aronson, E. (1995). Research in social psychology as a leap of faith. In E. Aronson (Ed.), *Readings about the social animal* (7th ed., pp. 3-9). New York: W. H. Freeman and Company.
- Bem, D. J. (1987). Writing the empirical journal article. In M. P. Zanna & J. M. Darley (Eds.), *The compleat academic: A practical guide for the beginning social scientist* (pp. 171-201). New York: Random House.
- Bowering, G. (1988). *Errata*. Red Deer, Alta.: Red Deer College Press.
- Cohen, J. (1990). Things I have learned (so far). *American Psychologist*, *45*, 1304-1312.
- Forgas, J. P. (1994). Sad and guilty? Affective influences on the explanation of conflict in close relationships. *Journal of Personality and Social Psychology*, *66*, 56-68.
- Stemberg, R. J. (1995). *The psychologist's companion: A guide to scientific writing for students and researchers* (3rd ed.). Cambridge: Cambridge University Press.