## How to Read an Empirical Journal Article in Psychology

Extracted and adapted by Shane Pitts from: *How to Read a Journal Article in Social Psychology*

by Christian H. Jordan and Mark P. Zanna

First published in R. F. Baumeister (Ed.), *The Self in Social Psychology* (pp. 461-470). Psychology Press.

When approaching a journal article most novices 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 fine, but it is not the best strategy to get to the central ideas when reading research articles in psychology. 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.

**What is a Journal Article Anyway?** Journal articles offer a window into the inner workings of psychology. They document how 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 psychology. Having documentation of past research allows researchers to build on past findings and advance our understanding of 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 “primary sources” and are peer-reviewed. 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.

**The Anatomy of Research Reports**

Most research reports in psychology are written in a standard format prescribed by the American Psychological Association. 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.

**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 (typically) 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 a 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.

*Critically and fundamentally, scientific articles are an argument.* They should be read (and written) from the point of view that the writers are trying their best to make a strong case (argument) for their hypotheses, or why they did the study. They are doing their study *because it fills in some small piece of evidence related to what we already know, but do not yet know* (i.e., a gap in the research or in what we know). They do this by citing evidence (past research), not their unsubstantiated opinions. They weave together many strands of evidence (articles) to show us what we know about the researchers’ question and to lead you, the reader, to what we do not yet know. What is that tiny missing piece of the puzzle? That missing piece should very easily flow directly from how the author’s have discussed the past evidence.

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 past research*. 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 (that is, what is the “gap” in our current understanding that the research is designed to fill)? How did the researchers derive their hypotheses? What questions do the researchers hope to answer with this study? Why is this study important? In other words, why did the authors conduct this research?*

**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, when applicable 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 (though this probably is not necessary for your papers). 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 support (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. Think about the measures researchers use while reading the method section. Do they adequately reflect or capture the concepts they are meant to measure? (Something you will later recognize as the measures’ construct validity). If a measure seems odd, consider carefully how the researchers justify its use.

Participants in 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*. 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)

*In sum, well-written results sections should be intelligible by reading just the words and skipping the numbers altogether*.

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 a 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*.

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 (1975) 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.” (p. 175)

This format roughly mirrors the process of scientific investigation, wherein researchers do the following: (I) 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’s an argument toward something. 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, psychology included, is to explain facts, to explain why what happened happened. 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**

Let's compare psychologists to salesclerks. Both psychologists and salesclerks 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.*

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. 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.

***Pro Tips for How to Read Empirical Journal Articles (from me)***

* \*The most important questions to ask yourself as you read a journal article are: “(1) What is the argument? and (2) What is the evidence to support the argument?”

**1. Get the core ideas first.**

* A. You are not reading a novel or piece of literature where you may want to start at the first word, end at the last, and read every word in between. I would not recommend that. Read the title and then the abstract first. Then read the abstract again. It is a dense, but important summary of the major points of the article. Don't expect to understand all of it. This brief paragraph (120 – 150 words) is important to read first because it tells you where the report is going, and gives you a useful framework for organizing information contained in the article. (Some “short reports” do not contain an abstract.)
* B. Then read the first and maybe second paragraph of the Introduction. This will tell you the topic of investigation and set the stage for the remainder of the “story” – the introduction. As you later read through the introduction, you may find some of the material difficult because the authors’ are writing for other psychologists. Look for summary statements, usually at the end of each paragraph.
* C. Then read the last paragraph (maybe last two or three) of the Introduction. This last paragraph (or so) often provides a summary of the purpose and proposed hypotheses of the study.
* D. Now read the first paragraph (or so) of the Discussion. Like the abstract, the first paragraph or two of this final section of the article usually contains all of the main ideas of a research report: What the hypotheses were, the major findings and whether they supported the original hypotheses.

In fact, some readers find it useful to read the first few paragraphs of the discussion section before reading any other part of a research report. 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.

E. Now, you’ll want to start at the beginning of the introduction and proceed through the entire paper already armed with a decent understanding of what the study will be about.

**2. Put yourself in the participants’ shoes.** While reading the methods section, try to imagine, as vividly as possible, being a participant in the experiment. This will help to make more concrete the actual experiment. Understand how the conceptual independent and dependent variables were actually manipulated and measured in the study (i.e., operationalized).

**3. Don’t get bogged down in the statistics, but do try to comprehend what was found.** If you feel comfortable with statistics, by all means puzzle through all the analyses in the results section. For the less experienced/confident, know that most good articles will 1) first present the numbers, then 2) talk about what the results mean in regular prose. Focus on extracting the meaning of the results. Also, look at any tables and graphs, and how they are described in the text.

**4. At least one more read through.** A little while after initially reading the article, go back and skim through everything again. See if it all “fits together” now that you’ve had time to reflect on the piece. Note anything new you noticed or realized about the article.

***KEY:*** **\*\*After reading an article, if you cannot write a very succinct summary (no more than 2-3 sentences) of what the research was about and what was discovered, then you probably did not understand it well enough. Try to read it again. It gets easier, I promise!**

**REFERENCES**

American Psychological Association (1994). Publication manual (4th ed.). Washington, D.C.

Aronson, E. (1995). Research in social psychology. 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.

Sternberg, R. J. (1995). *The psychologist's companion: A guide to scientific writing for* *students and researchers* (3rd ed.). Cambridge: Cambridge University Press.