**Synthesizing Sources**

**Synthesizing sources** involves combining the work of other scholars to provide new insights. It’s a way of [integrating sources](https://www.scribbr.com/working-with-sources/integrating-sources/) that helps situate your work in relation to existing research.

Synthesizing sources involves more than just [summarizing](https://www.scribbr.com/working-with-sources/how-to-summarize/). You must emphasize how each source contributes to current debates, highlighting points of (dis)agreement and putting the sources in conversation with each other.

You might synthesize sources in your [literature review](https://www.scribbr.com/dissertation/literature-review/) to give an overview of the field or throughout your [research paper](https://www.scribbr.com/category/research-paper/) when you want to position your work in relation to existing research.

## How to synthesize sources

To synthesize sources, group them around a specific theme or point of contention.

As you read sources, ask:

* What questions or ideas recur? Do the sources focus on the same points, or do they look at the issue from different angles?
* How does each source relate to others? Does it confirm or challenge the findings of past research?
* Where do the sources agree or disagree?

Once you have a clear idea of how each source positions itself, put them in conversation with each other. Analyze and interpret their points of agreement and disagreement. This displays the relationships among sources and creates a sense of coherence.

Consider both implicit and explicit (dis)agreements. Whether one source specifically refutes another or just happens to come to different conclusions without specifically engaging with it, you can mention it in your synthesis either way.

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Note that **synthesizing is not the same as summarizing.**

* A summary restates the information in one or more sources without providing new insight or reaching new conclusions.
* A synthesis draws on multiple sources to reach a broader conclusion.

There are two types of syntheses: **explanatory syntheses** and **argumentative syntheses**. Explanatory syntheses seek to bring sources together to explain a perspective and the reasoning behind it. Argumentative syntheses seek to bring sources together to make an argument. Both types of synthesis involve looking for relationships between sources and drawing conclusions.

In order to successfully synthesize your sources, you might begin by grouping your sources by topic and looking for connections. For example, if you were researching the pros and cons of encouraging healthy eating in children, you would want to separate your sources to find which ones agree with each other and which ones disagree.

After you have a good idea of what your sources are saying, you want to construct your body paragraphs in a way that acknowledges different sources and highlights where you can draw new conclusions.

As you continue synthesizing, here are a few points to remember:

* Don’t force a relationship between sources if there isn’t one. Not all of your sources have to complement one another.
* Do your best to highlight the relationships between sources in very clear ways.
* Don’t ignore any outliers in your research. It’s important to take note of every perspective (even those that disagree with your broader conclusion).

Synthesize your sources using:

* [Topic sentences](https://www.scribbr.com/research-paper/topic-sentences/) to introduce the relationship between the sources
* [Signal phrases](https://www.scribbr.com/working-with-sources/signal-phrases/) to attribute ideas to their authors
* [Transition words and phrases](https://www.scribbr.com/academic-writing/transition-words/) to link together different ideas

**Example Syntheses**

Below are two examples of synthesis: one where synthesis is NOT utilized well, and one where it is.

EXAMPLE 1:

Parents are always trying to find ways to encourage healthy eating in their children. Elena Pearl Ben-Joseph, a doctor and writer for *KidsHealth*, encourages parents to be role models for their children by not dieting or vocalizing concerns about their body image. The first popular diet began in 1863. William Banting named it the “Banting” diet after himself, and it consisted of eating fruits, vegetables, meat, and dry wine. Despite the fact that dieting has been around for over a hundred and fifty years, parents should not diet because it hinders children’s understanding of healthy eating.

In this sample paragraph, the paragraph begins with one idea then drastically shifts to another. Rather than comparing the sources, the author simply describes their content. This leads the paragraph to veer in an different direction at the end, and it prevents the paragraph from expressing any strong arguments or conclusions.

EXAMPLE 2:

Parents are always trying to find ways to encourage healthy eating in their children. Different scientists and educators have different strategies for promoting a well-rounded diet while still encouraging body positivity in children. David R. Just and Joseph Price suggest in their article “Using Incentives to Encourage Healthy Eating in Children” that children are more likely to eat fruits and vegetables if they are given a reward (855-856). Similarly, Elena Pearl Ben-Joseph, a doctor and writer for *Kids Health*, encourages parents to be role models for their children. She states that “parents who are always dieting or complaining about their bodies may foster these same negative feelings in their kids. Try to keep a positive approach about food” (Ben-Joseph). Martha J. Nepper and Weiwen Chai support Ben-Joseph’s suggestions in their article “Parents’ Barriers and Strategies to Promote Healthy Eating among School-age Children.” Nepper and Chai note, “Parents felt that patience, consistency, educating themselves on proper nutrition, and having more healthy foods available in the home were important strategies when developing healthy eating habits for their children.” By following some of these ideas, parents can help their children develop healthy eating habits while still maintaining body positivity.

In this example, the author puts different sources in conversation with one another. Rather than simply describing the content of the sources in order, the author uses transitions (like "similarly") and makes the relationship between the sources evident

Example: Poor synthesis

Lenneberg (1967) theorized that language acquisition could occur only within a critical period of development between infancy and puberty. Johnson and Newport (1988) have researched the capability of young people to learn a second language. Their findings suggest that young learners acquire a second language more easily than older learners. Schepens, van Hout, and van der Slik (2022) have found that age and language dissimilarity play a role in adults’ abilities to acquire a second language.

This paragraph provides no context for the information and does not explain the relationships between the sources described. It also doesn’t analyze the sources or consider gaps in existing research.

Example : Effective synthesis

Research on the barriers to second language acquisition has primarily focused on age-related difficulties. [Introducing the synthesis :The synthesis begins by characterizing the general approach of the sources that will be discussed, pointing out what they have in common. ] Building on Lenneberg’s (1967) theory of a critical period of language acquisition, Johnson and Newport (1988) tested Lenneberg’s idea in the context of second language acquisition. Their research seemed to confirm that young learners acquire a second language more easily than older learners.[ Connecting sources :It then emphasizes the connection between two specific sources and notes how one builds on the findings of the other].Recent research has considered other potential barriers to language acquisition. Schepens, van Hout, and van der Slik (2022) have revealed that the difficulties of learning a second language at an older age are compounded by dissimilarity between a learner’s first language and the language they aim to acquire[Alternative view :once it has emphasized connections between sources, it highlights the research that is in disagreement with the existing research and provides an alternative view of the problem]. Further research needs to be carried out to determine whether the difficulty faced by adult monoglot speakers is also faced by adults who acquired a second language during the “critical period.”[Research gap : the paragraph ends by considering what is missing from the discussion above, indicating a gap in the existing research].

### ****Unsynthesized Example****

Franz (2008) studied undergraduate online students. He looked at 17 females and 18 males and found that none of them liked APA. According to Franz, the evidence suggested that all students are reluctant to learn citations style. Perez (2010) also studies undergraduate students. She looked at 42 females and 50 males and found that males were significantly more inclined to use citation software (p < .05). Findings suggest that females might graduate sooner. Goldstein (2012) looked at British undergraduates. Among a sample of 50, all females, all confident in their abilities to cite and were eager to write their dissertations.

### ****Synthesized Example****

Studies of undergraduate students reveal conflicting conclusions regarding relationships between advanced scholarly study and citation efficacy. Although Franz (2008) found that no participants enjoyed learning citation style, Goldstein (2012) determined in a larger study that all participants watched felt comfortable citing sources, suggesting that variables among participant and control group populations must be examined more closely. Although Perez (2010) expanded on Franz's original study with a larger, more diverse sample

**Steps to synthesize information from different sources**

1. [Organize your sources](https://www.simplypsychology.org/synthesising.html#step1)
2. [Outline your structure](https://www.simplypsychology.org/synthesising.html#step2)
3. [Write paragraphs with topic sentences](https://www.simplypsychology.org/synthesising.html#step3)
4. [Revise, edit and proofread](https://www.simplypsychology.org/synthesising.html#step4)

### Step 1: Organize your sources

After collecting the relevant literature, you’ve got a lot of information to work through, and no clear idea of how it all fits together.

Before you can start writing, you need to organize your notes in a way that allows you to see the relationships between sources.

One way to begin synthesizing the literature is to put your notes into a table. Depending on your topic and the type of literature you’re dealing with, there are a couple of different ways you can organize this.

##### **Summary table**

A summary table collates the key points of each source under consistent headings. This is a good approach if your sources tend to have a similar structure – for instance, if they’re all empirical papers.

Each row in the table lists one source, and each column identifies a specific part of the source. You can decide which headings to include based on what’s most relevant to the literature you’re dealing with.

For example, you might include columns for things like aims, methods, variables, population, sample size, and conclusion.

For each study, you briefly summarize each of these aspects. You can also include columns for your own evaluation and analysis.

The summary table gives you a quick overview of the key points of each source. This allows you to group sources by relevant similarities, as well as noticing important differences or contradictions in their findings.

##### **Synthesis matrix**

A synthesis matrix is useful when your sources are more varied in their purpose and structure – for example, when you’re dealing with books and essays making various different arguments about a topic.

Each column in the table lists one source. Each row is labelled with a specific concept, topic or theme that recurs across all or most of the sources.

Then, for each source, you summarize the main points or arguments related to the theme.

The purposes of the table is to identify the common points that connect the sources, as well as identifying points where they diverge or disagree.

Synthesis matrix

To more easily determine the similarities and dissimilarities among your sources, you can create a visual representation of their main ideas with a **synthesis matrix**. This is a tool that you can use when researching and writing your paper, not a part of the final text.

In a synthesis matrix, each column represents one source, and each row represents a common theme or idea among the sources. In the relevant rows, fill in a short summary of how the source treats each theme or topic.

This helps you to clearly see the commonalities or points of divergence among your sources. You can then synthesize these sources in your work by explaining their relationship.

| **Example: Synthesis matrix** |
| --- |
|  | **Lenneberg (1967)** | **Johnson and Newport (1988)** | **Schepens, van Hout, and van der Slik (2022)** |
| **Approach** | Primarily theoretical, due to the ethical implications of delaying the age at which humans are exposed to language | Testing the English grammar proficiency of 46 native Korean or Chinese speakers who moved to the US between the ages of 3 and 39 (all participants had lived in the US for at least 3 years at the time of testing) | Analyzing the results of 56,024 adult immigrants to the Netherlands from 50 different language backgrounds |
| **Enabling factors in language acquisition** | A critical period between early infancy and puberty after which language acquisition capabilities decline | A critical period (following Lenneberg) | General age effects (outside of a contested critical period), as well as the similarity between a learner’s first language and target language |
| **Barriers to language acquisition** | Aging | Aging (following Lenneberg) | Aging as well as the dissimilarity between a learner’s first language and target language |

### Step 2: Outline your structure

Now you should have a clear overview of the main connections and differences between the sources you’ve read. Next, you need to decide how you’ll group them together and the order in which you’ll discuss them.

For shorter papers, your outline can just identify the focus of each paragraph; for longer papers, you might want to divide it into sections with headings.

There are a few different approaches you can take to help you structure your synthesis.

If your sources cover a broad time period, and you found patterns in how researchers approached the topic over time, you can organize your discussion **chronologically**.

That doesn’t mean you just summarize each paper in chronological order; instead, you should group articles into time periods and identify what they have in common, as well as signalling important turning points or developments in the literature.

If the literature covers various different topics, you can organize it **thematically**.

That means that each paragraph or section focuses on a specific theme and explains how that theme is approached in the literature.

If you’re drawing on literature from various different fields or they use a wide variety of research methods, you can organize your sources **methodologically**.

That means grouping together studies based on the type of research they did and discussing the findings that emerged from each method.

If your topic involves a debate between different schools of thought, you can organize it **theoretically**.

That means comparing the different theories that have been developed and grouping together papers based on the position or perspective they take on the topic, as well as evaluating which arguments are most convincing.

### Step 3: Write paragraphs with topic sentences

What sets a synthesis apart from a summary is that it combines various sources. The easiest way to think about this is that each paragraph should discuss a few different sources, and you should be able to condense the overall point of the paragraph into one sentence.

This is called a [topic sentence](https://www.scribbr.com/research-paper/topic-sentences/), and it usually appears at the start of the paragraph. The topic sentence signals what the whole paragraph is about; every sentence in the paragraph should be clearly related to it.

A topic sentence can be a simple summary of the paragraph’s content:

* “Early research on [x] focused heavily on [y].”

For an effective synthesis, you can use topic sentences to link back to the previous paragraph, highlighting a point of debate or critique:

* “Several scholars have pointed out the flaws in this approach.”
* “While recent research has attempted to address the problem, many of these studies have methodological flaws that limit their validity.”

By using topic sentences, you can ensure that your paragraphs are coherent and clearly show the connections between the articles you are discussing.

As you write your paragraphs, avoid quoting directly from sources: use your own words to explain the commonalities and differences that you found in the literature.

Don’t try to cover every single point from every single source – the key to synthesizing is to extract the most important and relevant information and combine it to give your reader an overall picture of the state of knowledge on your topic.

### Step 4: Revise, edit and proofread

**Like any other piece of academic writing, synthesizing literature doesn’t happen all in one go – it involves redrafting, revising, editing and proofreading your work.**

###### **Checklist for Synthesis**

  Do I introduce the paragraph with a clear, focused topic sentence?

  Do I discuss more than one source in the paragraph?

  Do I mention only the most relevant findings, rather than describing every part of the studies?

  Do I discuss the similarities or differences between the sources, rather than summarizing each source in turn?

  Do I put the findings or arguments of the sources in my own words?

  Is the paragraph organized around a single idea?

  Is the paragraph directly relevant to my research question or topic?

  Is there a logical transition from this paragraph to the next one?

Whether you’re synthesizing literature for an essay, a literature review, or any other paper, you should make sure you can answer yes to all of these questions.