

## The Research Question and Hypothesis

<p><b>What is a research question?</b></p>	<p>This is the question that you are trying to answer when you do research on a topic or write a research report.</p>
<p><b>Should a research question be general or specific?</b></p>	<p>It should be as specific as possible. In some cases, you may make two or more research questions to cover a complex topic.</p>
<p><b>What is an example of a research question?</b></p>	<p>For example, if you are studying the effects of sleep on reflexes, you might formulate the following research question:</p> <p><i>What are the effects of sleep on reflexes?</i></p> <p>A similar question might be:</p> <p><i>Does sleep have an effect on reflexes?</i></p> <p>Or:</p> <p><i>Is maximum reflex efficiency achieved after eight hours of sleep?</i></p> <p>The goal of your research is to find the answer to the research question.</p>
<p><b>What is a hypothesis?</b></p>	<p>A hypothesis is a statement that can be proved or disproved. A research question can be made into a hypothesis by changing it into a statement. For example, the third research question above can be made into the hypothesis:</p> <p><i>Maximum reflex efficiency is achieved after eight hours of sleep.</i></p>
<p><b>What is a null hypothesis?</b></p>	<p>A null hypothesis (abbreviated <math>H_0</math>) is a hypothesis to be disproved. The hypothesis above can be turned into a working null hypothesis simply by adding “not”.</p> <p><i>Maximum reflex efficiency is not achieved after eight hours of sleep.</i></p> <p>Another null hypothesis is:</p> <p><i>Sleep does not have an effect on reflexes.</i></p>

	<p>Null hypotheses are used in the sciences. In the scientific method, a null hypothesis is formulated, and then a scientific investigation is conducted to try to disprove the null hypothesis. If it can be disproved, another null hypothesis is constructed and the process is repeated.</p> <p>As an example, we might begin with the null hypothesis:</p> <p><i>Sleep does not affect reflexes.</i></p> <p>If we can disprove this, we find that sleep does have an effect. We might then go to the next null hypothesis:</p> <p><i>Different amounts of sleep have the same effect on reflexes.</i></p> <p>If we can disprove this, we can go to:</p> <p><i>Maximum reflex efficiency is not achieved after eight hours of sleep.</i></p> <p>And so on. At each stage in the investigation, we conduct experiments designed to try to disprove the null hypothesis.</p>
<p><b>What is the relationship between the null hypothesis and the thesis statement of a research report?</b></p>	<p>A generalized form of the final hypothesis (not the null hypothesis) can be used as a thesis statement. For example, if our final proved hypothesis is:</p> <p><i>Maximum reflex efficiency is achieved after eight hours of sleep</i></p> <p>we might generalize this to a thesis statement such as:</p> <p><i>This investigation demonstrated that sleep has an effect on reflex efficiency and that, in fact, maximum reflex efficiency is achieved after a specific period of sleep.</i></p>