

# INDUCTIVE AND DEDUCTIVE RESEARCH WHICH IS WHICH?

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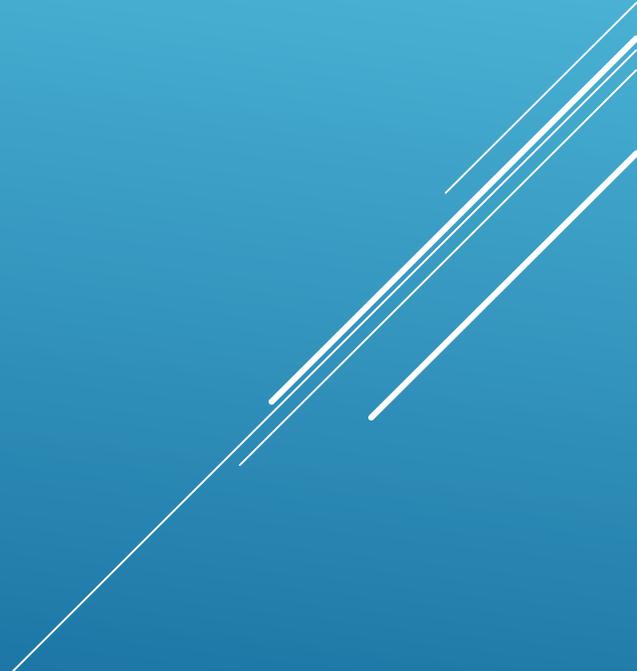
# THERE ARE TWO APPROACHES FOR HOW WE COME TO BELIEVE IF SOMETHING IS TRUE OR NOT

- ▶ 1. When we are exposed to a situation various times and from those times we can come up with a general truth
  - ▶ **Example:** two weeks ago on a Friday you stopped by the university and saw the employees wearing jeans. You then stopped by last Friday and also saw the employees wearing jeans. Yesterday, which was also a Friday you stopped by the university for a third time and saw the employees wearing jeans. From the observations you can conclude that on **all** Fridays employees wear jeans
- ▶ This pattern recognition that we observe and come to a conclusion is called **inductive reasoning**

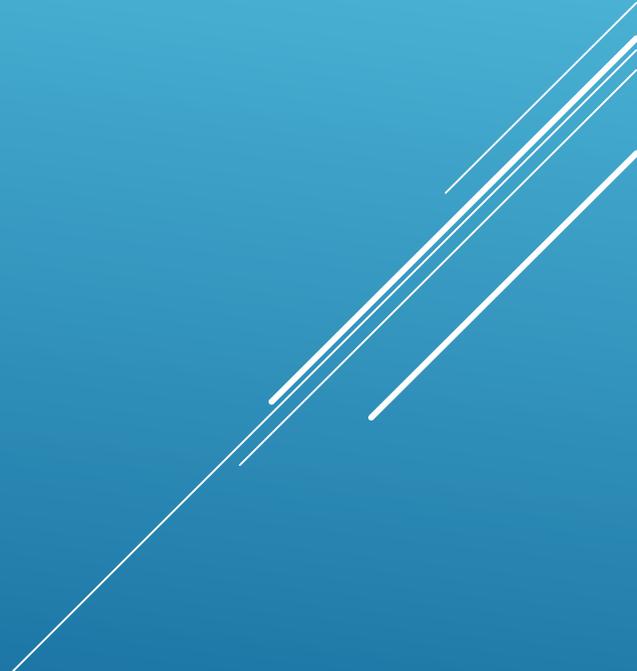
# THERE ARE TWO APPROACHES FOR HOW WE COME TO BELIEVE IF SOMETHING IS TRUE OR NOT

- ▶ Sometimes we start with knowledge previously known and work backwards.
  - ▶ **Example:** You read on the universities website that says all employees wear jeans on Friday so that they can wear the university t-shirt to show affiliation and support. Unlike the previous example (previous slide) you now start with the overall rule and expect everyone to support the university by wearing jeans and the t-shirt every Friday.
- ▶ When you start with a statement and then identify examples to support the statement, it is known as **deductive reasoning**

# WHAT ARE THE DIFFERENCES?

- ▶ **Inductive** reasoning's main aim is to **develop a theory**
  - ▶ **Deductive** reasoning's main aim is to **test an existing theory**
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# WHAT ARE THE DIFFERENCES

- ▶ Both deductive and inductive are used in various types of research and they can even be combined, but there is a big difference between them
  - ▶ Inductive reasoning moves from specific observations to broad generalizations, and deductive reasoning the other way around.
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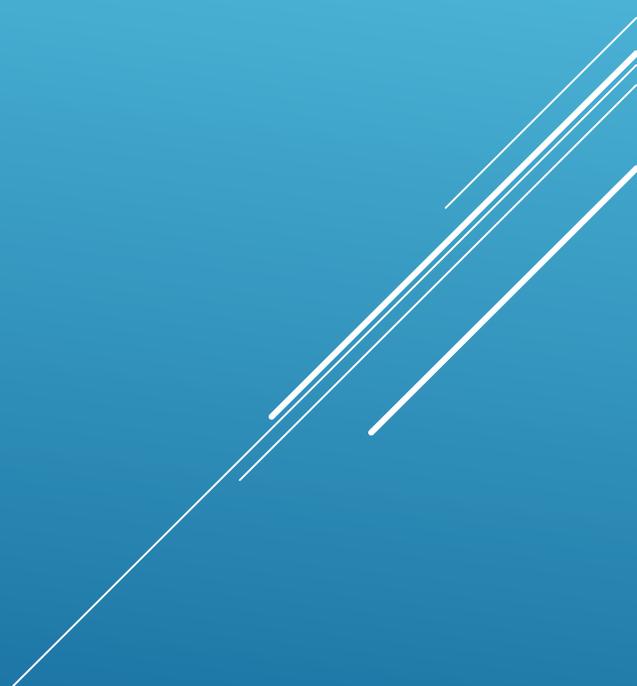
# INDUCTIVE REASONING

- ▶ With this reasoning you move from specific data to an overall concept that tries to show what that data means.
- ▶ **Example:** You eat a lobster and your lips and eyes get swollen. A week goes by and you have lobster again and you have the same reaction. Another two weeks goes by and yet again you have the exact same reaction. You know that swollen eyes and lips are a sign of an allergic reaction. Using **INDUCTUION** you come to the conclusion that you are allergic to lobster 😞
- ▶ **Data 1:** After I ate lobster, my lips and eyes got swollen
- ▶ **Data 2:** After I ate lobster, my lips and eyes got swollen
- ▶ **Data 3:** After I ate lobster, my lips and eyes got swollen
- ▶ **Additional Information:** swollen lips and eyes after eating shellfish may be a sign of an allergic reaction
- ▶ **Conclusion:** Likely I am allergic to lobster 😞

# INDUCTIVE REASONING

- ▶ The results of inductive thinking can be off center if data that is relevant is **overlooked**.
- ▶ **Example:** from the previous slide I used inductive reasoning to conclude that I was allergic to lobster after three times of eating lobster my eyes and lips were swollen. If I was eating “mofongo relleno de langosta” could I be as confident in my conclusion that I am allergic to lobster? Is it reasonable to assume that I could be allergic to another ingredient from this dish besides lobster?

# INDUCTIVE REASONING MUST BE USED WITH CARE.

- ▶ When you are going to evaluate an inductive argument always consider the following:
    - ▶ the amount and quality of the data
    - ▶ The existence of additional data
    - ▶ the relevance of necessary additional information
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# KEY POINTS OF INDUCTIVE REASONING

- ▶ Inductive reasoning can never lead to complete assurance.
- ▶ It allows someone to say that with the examples that are given to provide support, the claim is most likely true, but not guaranteed



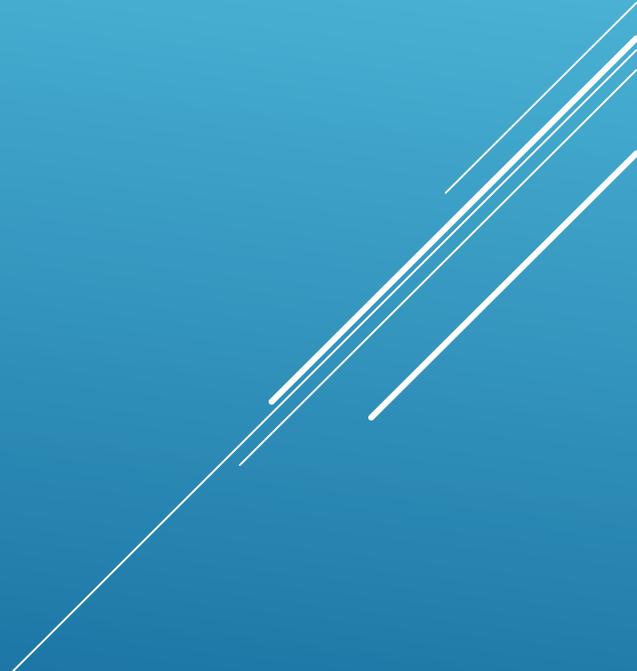
# DEDUCTIVE REASONING

- ▶ As opposed to inductive reasoning, deductive reasoning is built on two statements in which the logical relationship of the two should lead to a third statement that is unquestionably correct.
  - ▶ **Example:**
    1. **University employees wear jeans on Fridays**
    2. **Today is Friday**
    3. **University employees will be wearing jeans today**
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# DEDUCTIVE REASONING

- ▶ **Inductive** reasoning can often be hidden inside a deductive argument. This means that a generalization that is reached through inductive reasoning can be turned around and used as a truth for a deductive argument.
- ▶ **Example:**
  1. Most Dobermans are mean.  
Duke is a Doberman.  
Therefore, since Duke is a Doberman, he is mean
- ▶ In the example above we cannot know for certain that Duke is a mean Doberman
- ▶ This may seem logical but it is not based on facts only on observations and generalizations

# TEST THE ACCURACY OF A PREMISE

- ▶ Use the same questions (observations as Inductive (slide 7))
    - ▶ the amount and quality of the data
    - ▶ the existence of additional data
    - ▶ the relevance of necessary additional information
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# INDUCTIVE APPROACH SUMMARY

- ▶ When there is almost no information on a topic is when most of the time a inductive research is conducted (there is no theory to test as there is very little or no research on the subject). It consists of three stages:
    - ▶ Observation
    - ▶ Observe a pattern
    - ▶ Develop a theory
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# DEDUCTIVE APPROACH SUMMARY

- ▶ When conducting deductive research, you always start with a theory which is the result of the inductive research. If there is no theory yet, you cannot conduct deductive research. It consists of four stages:
  - 1. Start with an existing theory**
  - 2. Formulate a hypothesis based on an existing theory**
  - 3. Collect data and test your hypothesis**
  - 4. Analyze the results to determine if the data collected rejects or supports your hypothesis.**