

The Limits of Scientific Objectivity

COMPREHENSION • VOCABULARY • DISCUSSION

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Reading Passage

Read the passage carefully. Each paragraph is labelled with a letter for easy reference.

A

In the realm of scientific inquiry, the concept of objectivity is often hailed as a cornerstone of valid research. Scientists strive to eliminate bias, ensuring that their findings are based solely on empirical evidence. However, the notion of complete objectivity is increasingly being challenged by scholars who argue that personal perspectives inevitably influence research outcomes. For instance, Dr. Emily Carter, a renowned sociologist at the University of Chicago, emphasizes that researchers bring their own cultural backgrounds, values, and beliefs into their work, which can shape their interpretations of data. This perspective prompts a reevaluation of the traditional view that science is a purely objective enterprise, devoid of human influence. Furthermore, the limitations of scientific objectivity are underscored by historical examples where biases have led to significant misinterpretations of data. The infamous Tuskegee Syphilis Study, conducted from 1932 to 1972, serves as a stark reminder of how societal prejudices can infiltrate scientific research. In this ethically questionable study, African American men were deliberately misled about their health status and denied treatment, all in the name of understanding the progression of syphilis. This study not only highlights the impact of racial bias on scientific research but also raises profound questions about the integrity of findings produced under such conditions. As Dr. Carter notes, “If we do not acknowledge the role of social context in scientific inquiry, we risk perpetuating inequities and misinforming public policy.” Furthermore, the emergence of interdisciplinary research has added another layer of complexity to the discussion of objectivity in science. Fields such as environmental studies and public health increasingly require collaboration between scientists and social scientists, leading to a blending of methodologies and perspectives. This collaboration can enhance the richness of research findings but also introduces the challenge of reconciling differing viewpoints. For example, an environmental scientist may prioritize quantitative data on climate change, while a social scientist might focus on qualitative impacts on communities. The interplay of these perspectives can lead to more comprehensive insights, yet it also poses the question: how do we navigate the subjective elements that naturally arise in such collaborative efforts? As the academic community continues to grapple with these issues, it becomes clear that while the pursuit of objectivity in science is noble, it is far from absolute. The ongoing dialogue about the nature of objectivity invites researchers to critically examine their methodologies and the potential biases that may influence their work. It encourages a more nuanced understanding of how personal and societal factors can shape scientific inquiry, ultimately leading to more responsible and equitable research practices. This evolving conversation emphasizes the importance of recognizing the multifaceted nature of research and the necessity of integrating diverse perspectives to foster a more holistic approach to scientific inquiry.

Vocabulary Glossary

Key words and phrases from the passage. Study them before attempting the exercise below.

WORD / PHRASE	DEFINITION	EXAMPLE SENTENCE
objectivity	the quality of being free from personal feelings or opinions	<i>A judge must show objectivity when making decisions.</i>
bias	a feeling or opinion that affects how you see or judge something	<i>Her bias against new ideas made it hard for her to change her mind.</i>
empirical	based on tests or experience rather than ideas or theories	<i>The scientist's findings were supported by empirical data.</i>
interpretations	the way someone understands or explains something	<i>Different people have different interpretations of the same event.</i>
inevitably	in a way that cannot be avoided	<i>If you don't study, you will inevitably find the test difficult.</i>
renowned	known and admired by many people for a special skill or achievement	<i>She is a renowned artist, famous for her portraits.</i>
interdisciplinary	involving two or more areas of knowledge	<i>The university offers an interdisciplinary course in science and art.</i>
methodologies	a set of methods and principles used to do a particular activity	<i>The company adopted new methodologies to improve its operations.</i>
nuanced	having subtle differences in meaning or opinion	<i>The speaker gave a nuanced view of the political situation.</i>
holistic	considering a whole thing or being to be more than a collection of parts	<i>A holistic approach to health includes mental and physical well-being.</i>

Vocabulary Exercise — Fill in the Blank

Use one word or phrase from the glossary above to complete each sentence. Each item is used only once. Answers are on the final page.

1. The scientist aimed to maintain _____ in her research to avoid personal influence.
2. Despite efforts to avoid it, some level of _____ was evident in the study.
3. The results of the experiment were supported by _____ evidence.
4. Her _____ of the data was different from the other researchers'.
5. The team's approach was _____, combining insights from several fields.
6. A _____ understanding of the issue requires looking at all possible angles.

Comprehension Questions

These questions are different from the online practice test. Choose the best answer (A, B, C, or D). Answers and explanations are on the final page.

Question 1

What is Dr. Emily Carter's stance on cultural influences in research?

- A. She believes they are irrelevant to scientific outcomes.
- B. She argues they can shape the interpretation of data.
- C. She suggests they should be eliminated completely.
- D. She thinks they enhance the validity of research.

Question 2

Why is the Tuskegee Syphilis Study mentioned in the passage?

- A. To show how scientific research can be purely objective.
- B. To illustrate the role of racial bias in scientific research.
- C. To demonstrate the importance of empirical evidence.
- D. To highlight a successful interdisciplinary study.

Question 3

What does the passage suggest about the impact of interdisciplinary research?

- A. It simplifies scientific methodologies.
- B. It eliminates subjective elements in research.
- C. It complicates the pursuit of objectivity in science.
- D. It reduces the need for empirical data.

Question 4

How does the author view the traditional notion of science as purely objective?

- A. As entirely accurate and unchallenged.
- B. As increasingly questioned by modern scholars.
- C. As an outdated concept without relevance today.
- D. As a view supported by recent studies.

Question 5

What is the author's purpose in discussing the blending of methodologies?

- A. To criticize the lack of objectivity in modern science.
- B. To highlight a solution to eliminate personal bias.
- C. To show how diverse perspectives can enrich research.
- D. To argue for a return to traditional scientific methods.

Discussion & Writing Prompts

Each prompt references a specific detail from the passage above. Use for classroom discussion or a short written response (150–200 words).

1. Dr. Emily Carter in the passage argues that researchers' cultural backgrounds influence their work. How might this impact scientific studies in your country?

2. The passage mentions the Tuskegee Syphilis Study as an example of bias in research. Can you think of other historical studies with similar ethical issues?

3. Paragraph B suggests that interdisciplinary collaboration can complicate objectivity. What are some potential benefits and drawbacks of such collaborations in your field?

Answer Key

COMPREHENSION QUESTIONS

Q1 B

Q2 B

Q3 C

Q4 B

Q5 C

VOCABULARY EXERCISE

FIB1 objectivity

FIB2 bias

FIB3 empirical

FIB4 interpretations

FIB5 interdisciplinary

FIB6 nuanced

Comprehension Question Explanations

Why the correct answer is right — and why each wrong option is incorrect.

1. What is Dr. Emily Carter's stance on cultural influences in research?

✓ B — She argues they can shape the interpretation of data.

Dr. Carter emphasizes that personal perspectives can shape data interpretation.

✗ A — She believes they are irrelevant to scientific outcomes.

Dr. Carter argues the opposite; cultural influences are relevant.

✗ C — She suggests they should be eliminated completely.

She acknowledges these influences rather than suggesting elimination.

✗ D — She thinks they enhance the validity of research.

She does not claim they enhance validity but influence interpretation.

2. Why is the Tuskegee Syphilis Study mentioned in the passage?

✓ B — To illustrate the role of racial bias in scientific research.

The study is cited as an example of racial bias affecting research.

✗ A — To show how scientific research can be purely objective.

The study shows the opposite; it was not purely objective.

✗ C — To demonstrate the importance of empirical evidence.

Empirical evidence is not the focus of this example.

✗ D — To highlight a successful interdisciplinary study.

The study was not an example of interdisciplinary research.

3. What does the passage suggest about the impact of interdisciplinary research?

✓ C — It complicates the pursuit of objectivity in science.

The passage mentions interdisciplinary research introduces complexities.

✗ A — It simplifies scientific methodologies.

Interdisciplinary research adds complexity, not simplicity.

✗ B — It eliminates subjective elements in research.

Subjective elements still exist in interdisciplinary research.

✗ D — It reduces the need for empirical data.

Empirical data remains important in interdisciplinary studies.

4. How does the author view the traditional notion of science as purely objective?

✓ **B — As increasingly questioned by modern scholars.**

The passage states that scholars challenge the traditional view of objective science.

✗ **A — As entirely accurate and unchallenged.**

The passage indicates that this view is being challenged.

✗ **C — As an outdated concept without relevance today.**

The passage does not suggest it is outdated or irrelevant.

✗ **D — As a view supported by recent studies.**

The passage discusses challenges, not support from recent studies.

5. What is the author's purpose in discussing the blending of methodologies?

✓ **C — To show how diverse perspectives can enrich research.**

The passage discusses how blending methodologies can enrich research insights.

✗ **A — To criticize the lack of objectivity in modern science.**

The passage does not criticize modern science for lack of objectivity.

✗ **B — To highlight a solution to eliminate personal bias.**

Blending methodologies is not presented as a way to eliminate bias.

✗ **D — To argue for a return to traditional scientific methods.**

The author does not argue for returning to traditional methods.

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