THE ARTICLE

From https://breakingnewsenglish.com/2101/210110-identical-twins.html

A new study shows that while identical twins can look perfectly alike, it is not a perfect similarity. They are not clones of each other. Scientists at the University of Iceland analyzed the DNA from 387 pairs of identical twins - babies born from a single fertilized egg. The scientists compared the DNA with that of the twins' parents and children. The geneticists looked for mutations in the early stages of development. A mutation is a tiny change in the sequence of the DNA that can occur when a cell divides. This change causes a slight difference in the DNA replication process. A single, tiny change can create differences in height, intelligence, eye colour and even in susceptibility to disease.

The study shows that identical twins do not share totally identical DNA. In about 15 per cent of identical twin pairs, one twin carried a "substantial" number of mutations that the other did not share. The scientists say this difference is important as it sheds light on the "nature versus nurture" debate. This is whether human behaviour is determined by the environment, socialization and upbringing, or by a person's genes. The research shows that this tiny difference, and not environmental factors, could be the reason why one twin develops different behavioural characteristics or medical conditions. Professor Kari Stefansson said a genetic mutation may be the source of a given disease or trait.

Sources: https://www.**theguardian.com**/science/2021/jan/08/identical-twins-are-not-so-identical-study-suggests
https://www.**huffpost.com**/entry/twins-not-perfect-clones-study_n_5ff785b2c5b6fc79f463c60c
https://www.**livescience.com**/identical-twins-dont-share-all-dna.html

WARM-UPS

1. IDENTICAL TWINS: Students walk around the class and talk to other students about identical twins. Change partners often and share your findings.

2. CHAT: In pairs / groups, talk about these topics or words from the article. What will the article say about them? What can you say about these words and your life?

identical / twins / perfect / similarity / clone / parents / geneticists / mutation / height share / scientists / nature / nurture / human behaviour / genes / medical / disease

Have a chat about the topics you liked. Change topics and partners frequently.

3. DNA: Students A **strongly** believe scientists should amend DNA to make us healthier; Students B **strongly** believe otherwise. Change partners again and talk about your conversations.

4. CHILD: What are the gad and bad things about being one of these? Complete this table with your partner(s). Change partners often and share what you wrote.

	Good Things	Bad Things
An identical twin		
A quadruplet		
An only child		
The eldest sibling		
The youngest sibling		
The middle of 9 children		

5. PERFECT: Spend one minute writing down all of the different words you associate with the word "perfect". Share your words with your partner(s) and talk about them. Together, put the words into different categories.

6. CHARACTERISTICS: Rank these with your partner. Put the best at the top. Change partners often and share your rankings.

- Good looks
- Intelligence
- Sense of humor
- Being tall
- Optimistic
- Energetic
- Hair
- Good skin

VOCABULARY MATCHING

Paragraph 1

1.	alike	a.	A person or thing regarded as identical to another.
2.	clone	b.	The action of copying or reproducing something.
3.	fertilized	c.	Two or more subjects similar to each other.
4.	replication	d.	A particular order in which related events, movements, or things follow each other.
5.	mutation	e.	The action or process of changing or causing to change in form or nature.
6.	sequence	f.	The state or fact of being likely or liable to be influenced or harmed by a particular thing.
7.	susceptibility	g.	Caused an egg, female animal, or plant to develop a new individual by introducing male reproductive material.

Paragraph 2

8.	substantial	h.	A distinguishing quality or characteristic, typically one belonging to a person.
9.	shed light on	i.	The treatment and instruction received by a child from its parents throughout its childhood.
10.	nurture	j.	Unit of information transferred from a parent to child that causes characteristics or behaviours in that child.
11.	upbringing	k.	Of considerable importance, size, or value.
12.	genes	l.	Help to explain something by providing further information about it.
13.	characteristic	m.	A feature or quality belonging typically to a person, place, or thing and serving to identify it.
14.	trait	n.	Care for and encourage the growth or development of.

BEFORE READING / LISTENING

From https://breakingnewsenglish.com/2101/210110-identical-twins.html

1. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

a. A study suggests identical twins could in fact be clones of each other. **T / F**
b. Scientists looked at data from 387 identical twins. **T / F**
c. Scientists ignored any mutations found in DNA. **T / F**
d. A change in the DNA replication process can affect intelligence. **T / F**
e. About 15% of identical twin pairs had totally identical DNA. **T / F**
f. The research adds understanding to the nature versus nurture debate. **T / F**
g. The research shows DNA mutations makes identical twins less identical. **T / F**
h. A professor said genetic mutations might give rise to a certain trait. **T / F**

2. SYNONYM MATCH:

Match the following synonyms. The words in **bold** are from the news article.

1. perfectly	a. childhood
2. analyzed	b. alteration
3. single	c. helps to explain
4. mutation	d. vulnerability
5. susceptibility	e. examined
6. substantial	f. affected
7. sheds light on	g. considerable
8. determined	h. in every respect
9. upbringing	i. characteristic
10. trait	j. solitary

3. PHRASE MATCH: (Sometimes more than one choice is possible.)

1. identical twins can look	a. number of mutations
2. They are not clones	b. disease
3. babies born from a single	c. or trait
4. mutations in the early stages	d. conditions
5. susceptibility to	e. of each other
6. a substantial	f. of development
7. it sheds light on the nature versus	g. and upbringing
8. the environment, socialization	h. perfectly alike
9. medical	i. nurture debate
10. the source of a given disease	j. fertilized egg

COMPREHENSION QUESTIONS

From https://breakingnewsenglish.com/2101/210110-identical-twins.html

1. What does the article say identical twins are not clones of?

2. How many identical twins did scientists look at the DNA of?

3. Whose DNA did scientists compare the twins' DNA to?

4. What did the scientists look for?

5. What might DNA mutations increase the susceptibility of?

6. What does the DNA show identical twins do not share?

7. What debate does the research shed light on?

8. What might affect our behaviour besides socialization and environment?

9. What might be the reason for differences in medical conditions?

10. What does a professor say may be the source of a disease or trait?

AFTER READING / LISTENING

From https://breakingnewsenglish.com/2101/210110-identical-twins.html

1. WORD SEARCH: Look in your dictionary / computer to find collocates, other meanings, information, synonyms … for the words 'identical' and 'twin'.

identical	**twins**

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

2. ARTICLE QUESTIONS: Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

3. GAP FILL: In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning…?

4. VOCABULARY: Circle any words you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

5. TEST EACH OTHER: Look at the words below. With your partner, try to recall how they were used in the text:

• while	• shows
• clones	• carried
• born	• sheds
• early	• genes
• slight	• reason
• create	• trait

IDENTICAL TWINS DISCUSSION

STUDENT A's QUESTIONS (Do not show these to student B)

1. What did you think when you read the headline?
2. What images are in your mind when you hear the word 'identical'?
3. What do you know about twins?
4. What are the good things abut being an identical twin?
5. What do you think of cloning?
6. What do you know about DNA?
7. How much do you look like your parents or siblings?
8. In what ways do you take after your parents?
9. Would you like to be an identical twin?
10. Would you prefer to be a twin or a quadruplet?

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IDENTICAL TWINS DISCUSSION

STUDENT B's QUESTIONS (Do not show these to student A)

11. Did you like reading this article? Why/not?
12. What do you think of when you hear the word 'twins'?
13. What do you think about what you read?
14. What are the differences between twins and identical twins?
15. What do you know of the 'nature versus nurture' debate?
16. What parts of your genes would you want to go to your children?
17. Are we born with our personality or does our upbringing make it?
18. What changes would you have wanted made to your DNA?
19. How did your upbringing change you?
20. What questions would you like to ask the scientists?