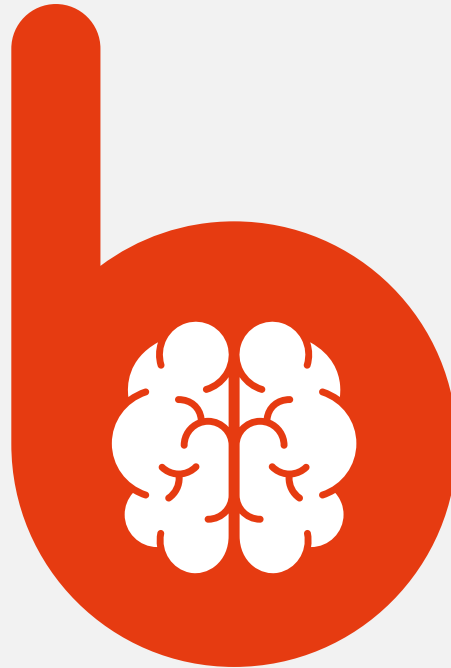


CRITICAL THINKING BAROMETER



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The second edition of the Critical Thinking Barometer

How do our fellow French and British citizens perceive and practice science? Which media do they use to stay informed?

In terms of scientific subjects, do they trust researchers, religious leaders or influencers more?

To form their opinions, do they rely on their own intuition or on other people's views?

To provide answers to these questions and gain an insight into the degree of critical thinking within the French and British population, Universcience presents the second edition of its Critical Thinking Barometer, produced by Opinion Way

This study was conducted on two samples:

- > One sample of 2,048 French citizens, representing the French population aged 18 and over, established using the quota method, based on criteria pertaining to sex, age, social and professional category, category of metropolitan area and region of residence.
- > One sample of 1,571 British citizens, representing the Great British population, aged 18 and over, established using the quota method, based on criteria pertaining to sex, age and region of residence.

KEY FINDINGS

NO CULTURAL BREXIT: FRENCH AND BRITISH CITIZENS SHARE A SIMILAR VIEW OF SCIENCE AND CRITICAL THINKING

Whether in their relations with science, scientific practices or the perception of climate change, there are many similarities between French and British citizens:

- One quarter of French and British respondents (**23%**) mention science as one of their main centres of interest;
- Scientific disciplines have left one in two respondents with **positive memories** in France (**50%**) and in the United Kingdom (**49%**);
- Over half of surveyed individuals **read up on scientific subjects at least once a month**: **55%** in France and **56%** in the United Kingdom;
- Almost 6 in 10 people (**58%** in France and **59%** in the United Kingdom) have gone on **at least one scientific outing** in the last three years;
- Science is mostly perceived as a **space for debate** (**82%** in France and **81%** in the United Kingdom) rather than a dogmatic field;
- Two in three respondents identify human activities as the **main cause of climate change**, in France (**63%**) and in the United Kingdom (**66%**), while over two in ten respondents in both countries adhere to proposals that deny climate change (**22%** and **24%**).

HOWEVER, BRITISH CITIZENS ARE DIFFERENT IN SOME ASPECTS:

- They use **digital technology to inform themselves** more: **81%** use Internet (excluding social networks) compared with **70%** of French respondents, and **45%** check social networks (compared with **31%** of French respondents); they are **more trusting of Internet** (excluding social networks) as a source of information (**50%** against **39%**);
- They are more convinced of the **scientific community's independence** (**56%** against **48%**);
- They attribute the development of their critical thinking more to **exact sciences** (**58%** against **50%**);
- Their first criterion for assessing critical thinking is the **ability to distinguish knowledge from opinions** (**49%**), a criterion which is far less central in France (**27%**);
- More British respondents state that **they consider several different opinions** before making up their own mind on a topic (**84%** against **69%**) but they still prefer to talk with people who share their opinions (**60%** against **42%**);
- **They have a higher level of confidence in technical solutions**: more British respondents are convinced that phasing out fossil fuels will reduce our environmental impact (**75%** against **57%**) and that technological innovation could solve climate change (**60%** against **53%**).

1

IN FRANCE AND IN THE UNITED KINGDOM, NO FRACTURE BETWEEN CITIZENS AND SCIENCE, AND SIMILAR SCIENTIFIC ACTIVITIES

- In France and in the United Kingdom, interest in science appears to vary. One quarter of French (23%) and British respondents (23%) mention science as one of their main centres of interest. This is a centre of interest that appears far less frequently than travel (49% for French respondents and 52% for British respondents), books and reading (44% and 51%) or music (42% and 49%), but almost as frequently as interior decoration (29% for French respondents and 24% for British respondents), political and social news (29% in both countries) or fashion and clothing (25% in both countries).
- French citizens tend to define themselves as more “scientific” in light of their education: 44% consider that they were “scientific” students, including 27% “quite scientific” and 17% “as scientific as literary”, while 37% of British respondents define themselves as “scientific”, including 21% “quite scientific” and 16% “as much one as the other”.
- During their school years, scientific disciplines have left one in two respondents with positive memories in France (50%) and in the United Kingdom (49%). Life sciences have left more French respondents with positive memories (58%) than British respondents (49%). On both sides of the channel, mathematics is the most divisive subject, and has the highest score for worst memory: 34% in France and 25% in the United Kingdom.
 - On average, over half of respondents read up on scientific subjects at least once a month: 55% in France and 56% in the United Kingdom. The media used are very similar: scientific documentaries (41% in France and 40% in the United Kingdom), websites on scientific subjects (33% and 34%), YouTube videos (30% and 34%), scientific publications and articles (24% and 24%). Podcasts and scientific programmes are listened to by more respondents in the United Kingdom (24%) than in France (19%).
- Information on scientific subjects is also gained from leisure or cultural activities: almost 6 in 10 respondents (58% in France and 59% in the United Kingdom) have gone on at least one scientific outing in the last three years. Visits to zoos or aquariums are the most popular activities (39% of French respondents and 35% of British respondents). More British respondents have visited an industrial heritage site in the last three years (22%) than French (14%).
 - British respondents practice scientific activities slightly more frequently: 43% do so at least from time to time, compared with 38% of French respondents. In particular, they visit scientific exhibitions more often (32% against 27% of French respondents), participate in more scientific outings or trips (21% against 15%) and collaborate in slightly more participatory science experiments (21% against 18%).
- As part of their leisure activities, one third of respondents (34% of French respondents and 30% of British respondents) state that they have already reproduced scientific experiments at home. This is even a regular activity for 16% of French respondents and 15% of British respondents. The experiments attempted most often are chemical reactions (15% in France and 12% in the United Kingdom) and eruptions/explosions (14% in both countries) which may take the form of volcanoes or putting mentos in Coca Cola. More British respondents state that they have their children participate to introduce them to scientific experiments (12% against 6% of French respondents).

2

IN THE UNITED KINGDOM, MORE DIGITAL SOURCES OF INFORMATION AND MORE ATTENTION PAID TO THE SOURCE OF ONLINE INFORMATION

- In general, the two most used sources of information are the Internet and television. The internet is a particularly important source in the United Kingdom: **81%** of British respondents gain their information from the Internet (excluding social networks) compared with **70%** of French respondents, and **45%** from social networks, against **31%** of French respondents. They also rely more on their circle for information (**49%** against **43%** of French respondents). Traditional media have a similar importance in both countries, although they are slightly behind in the United Kingdom: television is still one of the main sources of information for **69%** of French respondents and **65%** of British respondents, followed by the radio (**44%** of French respondents and **42%** of British respondents) and the printed press (**36%** and **33%**).

- When gathering information from the Internet, French and British respondents use strategies that are similar on the whole to assess whether information is trustworthy, and the media providing the information is the main criterion of assessment. However, we note that in the United Kingdom, the source of information is a more important criterion than in France: British citizens judge information more based on the media it is from (**48%** against **43%** of French respondents), finding the same information in other media (**35%** against **29%**), it being shared by an expert, researcher or think tank (**28%** against **8%**) and its author (**25%** against **21%**). French respondents afford more weight to content and argumentation (**35%** against **22%** of British respondents). References to other sources of

information are also one of the main criteria of trustworthiness in the eyes of French respondents (**37%**) and British respondents (**35%**) alike, and both samples assign less importance to the independent or alternative nature of the media (**22%** and **20%**), the date of update (**20%** and **21%**), the fact that it has been shared by a member of their circle (**15%** and **16%**), the amount of comments (**9%** and **11%**), design (**4%** and **5%**) and the fact that it has been shared by an influencer (**3%** and **6%**).

- Although not the most used media, radio is by far the media that incites the most trust, more so in the United Kingdom (**63%**) than in France (**55%**). The internet (not including social networks) is also more trusted by British respondents (**50%** against **39%** of French respondents). Other sources of information

arouse similar levels of trust, whether they be television (**39%** of British respondents and **37%** of French respondents), social networks (**30%** and **29%**), the respondent's circle (**35%** and **27%**) or the printed press (**19%** and **22%**).

- Faced with these many sources of information, **85%** of French respondents and **82%** of British respondents have already experienced feelings of fatigue. This saturation of information is even experienced regularly or sometimes by **63%** of French respondents and **59%** of British respondents.

3

THE IMPORTANCE OF SCIENCE AS A SOURCE OF NEW KNOWLEDGE IS WIDELY ACCEPTED, ALTHOUGH A CERTAIN DEGREE OF RELATIVISM IS EXPRESSED IN BOTH COUNTRIES

- There is a common perception of science: for four in five respondents (**81%** of French respondents and **80%** of British respondents), science is an integral part of culture. Science is primarily seen as a non-dogmatic field, which implies that scientific knowledge is changing: a little over four in five respondents consider that science is a permanent space for debate (**82%** of French respondents and **81%** of British respondents). French respondents are a little more convinced that science must doubt everything that has not yet been proven or

verified (**81%** against **73%** of British respondents) and are a little less convinced that an assertion holds more value if scientifically proven (**77%** against **82%** of British respondents).

- A minority has a more rigid view of science: **29%** of French respondents and **23%** of British respondents adhere to the idea that a scientific result is not open to discussion or debate, and one in five respondents (**21%** in both countries) consider that scientific theories never change.

- A certain degree of relativism in respect of science is found in some perceptions and is expressed differently depending on the country: more British respondents consider that scientific theories are theories like any other (**65%** against **58%** of French respondents), while French respondents are more sceptical of the idea that science is the only trustworthy source of knowledge on the world (**51%** against **56%** of British respondents) and that the scientific community is independent in the approval of its findings (**48%** against **56%**).

4

A SIMILAR DEFINITION OF CRITICAL THINKING AND A SHARED RECOGNITION OF SCIENCE'S CONTRIBUTION TO ITS DEVELOPMENT

- The role played by science disciplines in developing critical thinking is widely recognised by the surveyed individuals: among them, one third (32% of French respondents and 36% of British respondents) believe that all sciences contribute towards developing critical thinking. However, fewer French respondents primarily assign this role to “human” sciences (28% against 20% of British respondents) and less to “exact” sciences (14% against 18% of British respondents). Only a minority (13% of French respondents and 11% of British respondents) are convinced that critical thinking is not acquired through science.
- Literature and human sciences are mentioned by 71% of French respondents and 69% of British respondents as disciplines having enabled them

to develop critical thinking, notably the study of their own language (39% of French respondents and 45% of British respondents) and history and geography (33% and 36%); education on exact sciences is more associated with the development of critical thinking by British respondents (58%) than by French respondents (50%), notably mathematics (35% against 22% in France) and physics and chemistry (27% against 17%). Only 10% of French respondents and 9% of British respondents believe that no discipline has contributed towards their development of this skill.

- For most French and British respondents, demonstrating critical thinking means possessing a set of complementary behaviours.

- For 90% of French respondents and 89% of British respondents, critical thinking is illustrated in attitudes relating to thought process and argumentation. The main marker of critical thinking varies from one country to another: British respondents place the ability to distinguish knowledge from opinions first (49% against 27% for French respondents), while French respondents favour the ability to reason logically (48% against 40%). In France and in the United Kingdom, critical thinking is also associated with the ability to change one's mind (39% and 37%), to justify one's choices (33% in both countries), and to question the word of authority (18% and 22%) and to be mindful of one's intuition (18% and 14%).

- Attitudes towards information are mentioned by 83% of French respondents and 81% of British respondents, such as seeking more knowledge before making an opinion (48% and 44%), the ability to assess the credibility of information (40% and 44%), to identify the reliability of a source (39% and 41%) and systematically doubting information received (21% and 15%).
- Attitudes towards dialogue and debates of ideas are mentioned by 62% of French respondents and 60% of British respondents, such as the ability to exchange with people with different opinions (43% and 34%) and to understand others' arguments (36% and 41%).

5

SIMILAR DEBATE PRACTICES, WHICH HELP TO DEVELOP CRITICAL THINKING, DESPITE A MORE MARKED PREFERENCE FOR CONSENSUAL EXCHANGE IN THE UNITED KINGDOM.

- As regards their own critical thinking, 78% of French respondents and 83% of British respondents feel that it is developed as much through contact with others as through their own thought processes.
- The role assigned to close circles is the same in both countries. Among those having most contributed towards the development of their critical thinking, French and British respondents agree that their parents are most instrumental (72% in both countries). They also afford an important role to the academic world, and notably to their teachers (68% of French respondents and 71% of British respondents), but also to educators in the United Kingdom (63% against 26% in France). Their friends hold the second place in both countries (68% of French respondents and 69% of British respondents). For one in two respondents, work colleagues have also contributed (51% in France, 52% in the United Kingdom). Meanwhile, the influence played by individuals met in the context of associative activities is recognised more by French respondents (44% against 36% of British

respondents). Critical thinking can also develop thanks to individuals that we are not directly in contact with: authors (53% of French respondents and 57% of British respondents) or figures from the scientific community (47% and 57%). Less frequently, journalists (40% and 39%), figures from the art community (36% and 39%) and influencers and public figures (18% and 25%) may also have played a role.

- In practice, most French and British respondents say that they are prepared to change their opinion based on convincing reasons (80% and 85%) and believe it is important to question traditional beliefs with logical and rational evidence (75% and 74%). Being aware of many different opinions before making one's own mind up is more important to British respondents (84%) than French respondents (69%).
- Adopting a critical stance and confronting different opinions is less comfortable for British respondents: they often see themselves as more “conventional” (60%

against 51% of French respondents), are more likely to state that they prefer to speak with people who share their opinions (60% against 42%) and more of them reject the “critical thinker” label when characterising their personality (51% against 42%). Behind this more accepted idea of exchanging ideas, more British respondents express the feeling of often having opinions that do not match the majority opinion (56% against 46%).

- Despite stating less interest in discussions with people with different opinions, British respondents become involved in debates on society or science topics as much as French respondents: the majority states that they participate often or from time to time in debates with friends (65% in both countries) or during family meals (61% in France, 57% in the United Kingdom). The place of work is less considered as a place for exchanging ideas (32% for French respondents, 34% for British respondents). And although a minority practice, more British respondents use social networks as a place for debate (29% against 23%).

6

THE MAJORITY OF FRENCH RESPONDENTS AND BRITISH RESPONDENTS ARE CONVINCED OF THE EXISTENCE OF CLIMATE CHANGE, BUT FRENCH RESPONDENTS ARE MORE RESERVED AS REGARDS TECHNICAL SOLUTIONS AND THE CREDIBILITY OF EXPERTS

- The existence of undisputable scientific consensus on climate change is widely accepted in both countries and appears even more obvious in the United Kingdom: **63%** of French respondents and **70%** of British respondents adhere to this idea. However, many respondents believe that there is no consensus (**23%** in France, **19%** in the United Kingdom) or have no opinion (**14%** in France, **11%** in the United Kingdom). The reasons for this phenomenon are not identified with certainty by a portion of the surveyed individuals: while **63%** of French respondents and **66%** of British respondents believe the CO₂ produced by human activities to be the main cause of climate change, one quarter of respondents disagrees (**26%** of French respondents and **21%** of British respondents) and more than one in ten have no opinion (**11%** of French respondents and **13%** of British respondents).
- Proposals that strongly relativise the climate crisis are adhered to by a non-negligible proportion of

respondents, although in the minority: **40%** of French respondents and **44%** of British respondents consider that, although temperatures are rising, wildlife is capable of adapting; for **22%** of French respondents and **24%** of British respondents, the recent cold snaps in the USA show that there is no climate change.

- To address the climate crisis, the idea is that small acts are impactful is widely shared: **75%** of French respondents and **78%** of British respondents believe that these can reduce greenhouse gas emissions. Along with these individual actions, both countries have high expectations of companies: **68%** of French respondents and **64%** of British respondents believe that they must be the first to act against the climate crisis as the main actors responsible for it.
- As regards technical solutions, they are more widely adhered to in the United Kingdom: the phasing out of fossil fuels is seen by three quarters of British respondents

as an effective remedy to reduce human impact on the environment (**75%** against **57%** of French respondents). Although not a widespread view, British respondents are also less reserved regarding the interest in technological innovation: **60%** want to believe that they will provide solutions to climate change, compared with **53%** of French respondents.

- In France and in the United Kingdom, no groups of actors that can give their view on climate change are able to inspire great trust. French citizens are more careful than their neighbours. However, scientists inspire the most trust: **42%** of French respondents and **49%** of British respondents trust the majority of scientists specialising in the climate; while **35%** of French respondents and **39%** of British respondents trust the majority of other scientists.
- The development of scientific expertise or expertise relating to the climate inspires more trust from British citizens than from French citizens: 4 in 10 British respondents trust the

majority of science culture museums and centres (**45%** against **35%** of French respondents), science journalists (**39%** against **30%**), weather presenters (**37%** against **30%**) and environmental protection organisations (**36%** against **28%**). However, scientist Youtubers struggle to convince in both countries: **15%** of British respondents and **13%** of French respondents trust the majority of them to talk about the climate crisis.

- British respondents are also more trusting of their close circle: close to one third of them (**30%**) trust the majority of their friends and colleagues when talking about the climate crisis, against **22%** of French respondents.
- Other actors inspire limited trust among respondents in both countries: only **15%** of British respondents and **12%** of French respondents trust most companies, **15%** and **10%** influencers and public figures, **13%** and **10%** political representatives, **12%** and **11%** religious representatives.

IN CONCLUSION, THIS STUDY PROVIDES SEVERAL KEY LESSONS:

- > French and British citizens share the same level of interest in science and similar practices: half of them regularly keep themselves informed on scientific topics and include scientific activities in their leisure time at least occasionally, while others keep more distance from scientific discourse.
- > Internet (excluding social networks) is now the main source of information in both countries, with more use and more trust in this media among the British. To assess the reliability of information online, they use strategies that are similar to those used by French citizens, with increased vigilance regarding the origin of information (identity of the media disseminating the information, finding the same information in other media, warnings from experts, etc.).
- > French and British respondents are very close in their perception of science: it is a space for debate for most of them, while a minority has a more rigid view of the development of scientific knowledge.
- > British citizens afford a greater role to exact sciences when developing their critical thinking than French citizens. They share the same definition of critical thinking, based on argumentation, information and dialogue with a nuance: they grant more importance to the distinction between knowledge and opinion.
- > The relation with divergent opinions is a little different in the United Kingdom: British residents grant more value to the consideration of several opinions before reaching a conclusion, more often describe themselves as “conventional” and feel less comfortable with a counterpart who does not share their opinion.
- > In both countries, recognition of climate change and its origins is widely shared, but one in five respondents adheres to statements that deny its existence. British respondents are more trusting of solutions to be adopted and in expert discourse on climate change.

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