

Watching viewers watch subtitled videos. Audiovisual and linguistic factors in subtitle processing.

Research questions and goals

How is reading subtitles different from reading a book? Unlike when reading a book, when watching subtitled films, people are busy processing the sequences of images, sounds and the text of the subtitles, at the same time trying to follow the action and stay immersed in the story. Although watching subtitled films may seem like a passive activity, it is in fact extremely complex and requires the use of many cognitive resources. Typically, viewers move their eyes to different points on screen about two to five times per second, which in total amounts to over 20 thousand eye movements in an average 90-minute film. But what are the factors that determine where viewers look and for how long? How is our gaze dependent on the nature of the video, sound, and the subtitles? In our project, we examine exactly that. For instance, we want to understand what happens when the video or sound are missing, which often takes place when people are travelling and watching subtitled videos with the sound off. We also investigate how the language of the subtitles, such as English subtitles to English films and Polish subtitles to English films, influences the way we watch subtitled films. Finally, we are also interested in how individual characteristics of viewers, such as their proficiency in the language of the film soundtrack, working memory capacity or immersive tendency, affect the way they watch subtitled videos.

The project answers the following research questions:

1. What is the impact of video characteristics, such as the presence of video and sound, on subtitle processing by viewers?
2. What is the role of subtitle parameters, such as subtitle speed and the language of subtitles, in the processing of subtitled videos?
3. Can individual viewers' characteristics in any way predict subtitle processing and viewing patterns?

Research methods

Our international team of researchers will conduct a series of eye-tracking experiments with viewers on two continents in three different countries (Poland, the UK and Australia). The experiments will be structured around four key factors: video, sound, subtitle speed and subtitle language. We will monitor viewers' eye movements with an eye tracker and measure their comprehension, cognitive load, and immersion.

Each experiment will consist of three stages:

1. Participant profiling: English proficiency test, working memory capacity test and immersive tendency test
2. The experiment: eye-tracking, comprehension, cognitive load and immersion tests followed by an interview
3. Data analysis

Project impact

Understanding how people process subtitled videos is of fundamental importance in a digital society that increasingly relies on the exchange of audiovisual material. The results of our study may also be directly applicable to translation policy, audiovisual translation standards and translator training. They may also provide insight into the mechanisms underlying audiovisual speech processing, media consumption, speech therapy or linguistic processing in general.

By conducting this project, we also address two burning issues in modern science: the replication crisis and the reproducibility of research results. Replication provides the opportunity to assess the reproducibility of research results, increases their validity, and improves the dependability of our current knowledge about subtitling.

This project brings together some of the world-leading researchers in the field of eye tracking research in subtitling. Building on our previous work, we aim to develop a new methodological approach to study audiovisual and subtitle-related factors affecting the reading of subtitles. We aim to achieve this goal by harnessing data science, fostering replicability and promoting open science.

