

## **When 'Likely' Doesn't Mean the Same: Investigating Consistency in Multilingual Probability Communication**

### **Why is this problem important?**

Imagine this situation: a doctor tells a Polish patient that a new "treatment will *probably* help," and tells a German patient that "treatment *wahrscheinlich* helps." Do both patients understand the same thing? It turns out, not necessarily. In a world where people increasingly communicate in foreign languages – especially English – such differences can lead to dangerous misunderstandings.

In the European Union, with its 24 official languages, uncertainty communication is crucial in medicine (diagnoses), law (court verdicts), economics (investments), and politics (international organization communications). When we say "*possible*," "*probable*," or "*rare*," each of us may understand these words differently – and when we do so in a foreign language, the differences can be even greater.

### **The great communication mystery**

Here's a real experiment: ask a Pole, a German, and a Spaniard to say what percentage the word "*likely*" means. The Pole will say 70%, the German 60%, and the Spaniard 80%. They all speak English, they all understand the word – but each thinks of something different!

### **Now imagine what happens during:**

**EU climate negotiations:** "Emissions will *probably* drop" – what drop are we talking about? 30%? 70%?

**Stock operations:** "Shares *prawdopodobnie* to rise" – invest 1,000 euros or 10,000?

**Pandemic communications:** "Vaccine *można* help" – get vaccinated or wait?

### **What are we studying?**

Our project examines how people from five European countries (Poland, Germany, France, Spain, and England) understand probability expressions. We will conduct two large online experiments with 2,200 bilingual participants.

**Experiment 1** will test how people translate words into numbers. We will show participants 29 expressions like "*often*," "*rarely*," "*possible*" in their native language and in English. Participants will indicate what percentage each expression means (e.g., is "*probably*" 60%, 70%, or 80%?).

**Experiment 2** will do the reverse – we'll show numbers (e.g., 65%) and check what words people choose to describe them. This will help understand whether the "*word*→*number*" process works the same as "*number*→*word*."

### **Expected discoveries**

We predict finding significant differences in how people interpret the same expressions across different languages. For example, Polish "*prawdopodobnie*" might mean a different percentage than English "*likely*." Moreover, the same person might understand expressions differently in their native versus foreign language.

### **Why is this important?**

The results will help create guidelines for better international communication. They can be used by:

- **Doctors** treating foreign-language patients;
- **Translators** of legal and medical documents;
- **Politicians** communicating within the EU;
- **Journalists** reporting international events.

### **Practical applications**

The study may lead to creating an "uncertainty dictionary" – a guide showing how to precisely communicate probability across different European languages. This, in turn, could reduce the risk of dangerous misunderstandings in situations where communication precision can save lives or prevent conflicts.