Invent yourself: Language Barriers

Shenzhen Middle School 2

Introduction of Question

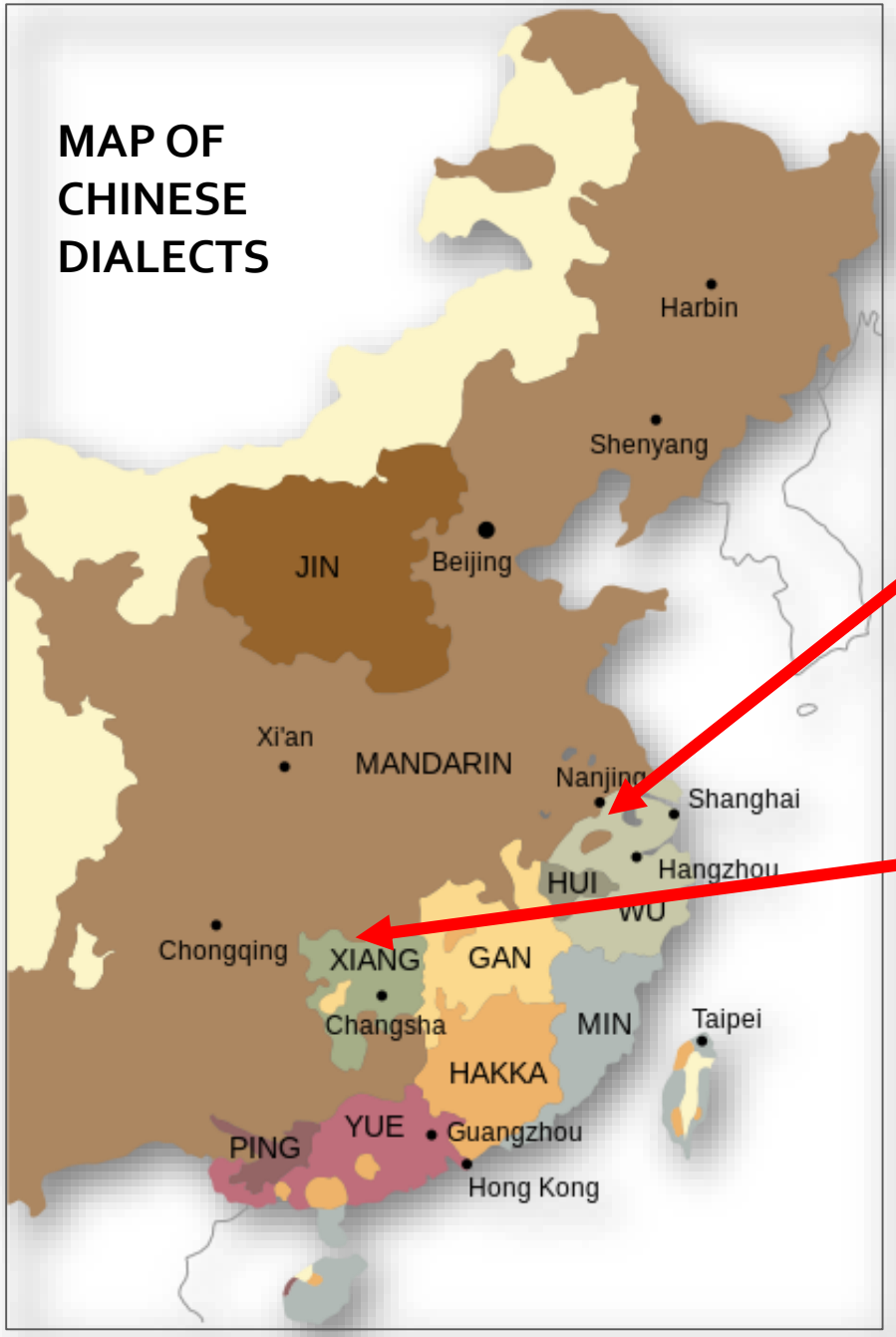
- It is an amazing thing that people using different dialects or languages can sometimes understand each other without any prior intentional study. Similarities in origins of languages contribute to this interesting phenomenon. However, experiments showed that in certain cases, the intelligibility is not mutually equal.
- We studied this phenomenon using 2 dialects of Chinese as examples. Some dialects of Chinese are indeed different from each other, but there are interesting intelligibilities between them. We tried several parameters to achieve quantification in this experiment. With quantitative parameters, the intelligibility can be noticed and demonstrated more clearly and rigorously.

Statement of Question

We demonstrate a set of experiments to learn about the intelligibility between Mandarin and other dialects of Chinese.

We also want to study the difference in the intelligibility between different pairs of dialects.

Dialects of our choice



Mandarin

The Gaochun Dialect (branch of Wu Dialect)

The Xiang Dialect

Dialects of our choice

- We attempt to study the asymmetrical (one way) intelligibility between

  Gaochun Dialect – Mandarin &

  Xiang Dialect –Mandarin.

<u>Why asymmetrical?</u>

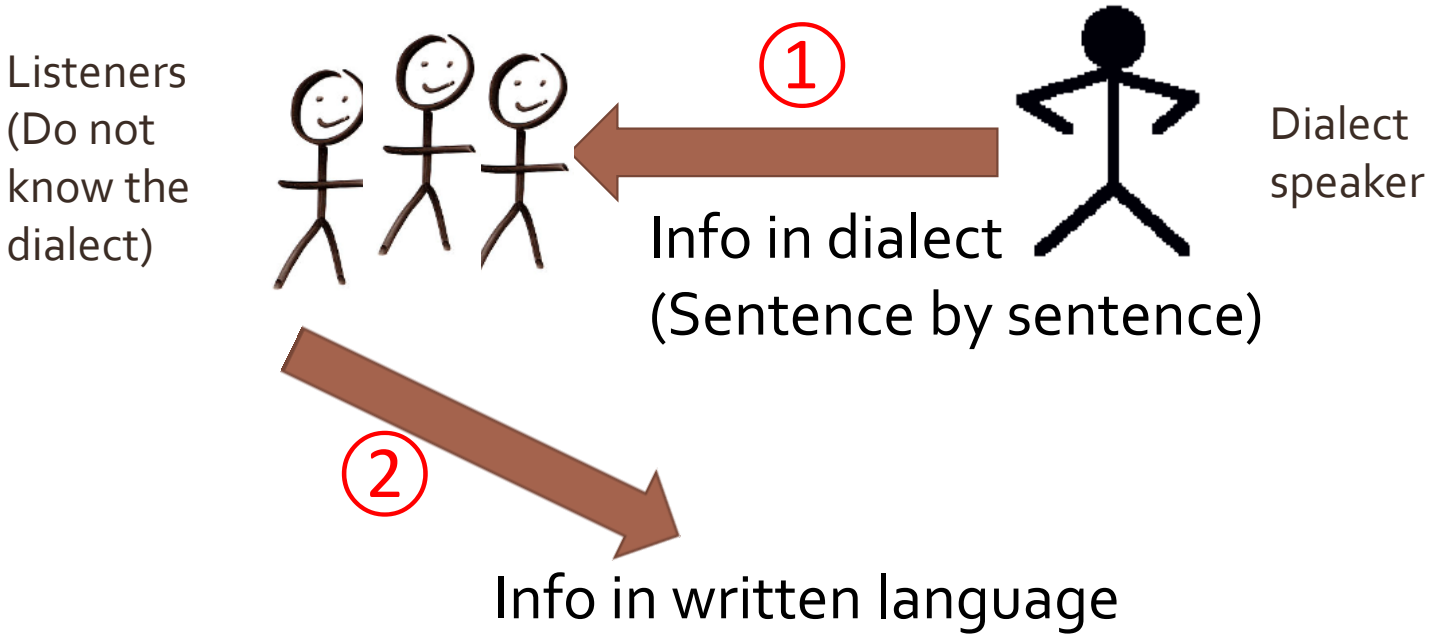
1. Everyone knows Mandarin in China.

2. Intelligibility **between dialects A and B** can be divided to asymmetrical intelligibility between

A → Mandarin and **B → Mandarin**

Design of experiments

- **Process of Experiment**



Design of experiments

Design of experiments

- We invited 10 students **who can only speak Mandarin** as Listeners, and 2 adults speaking The Gaochun Dialect and Xiang Dialect, respectively, as Speakers.

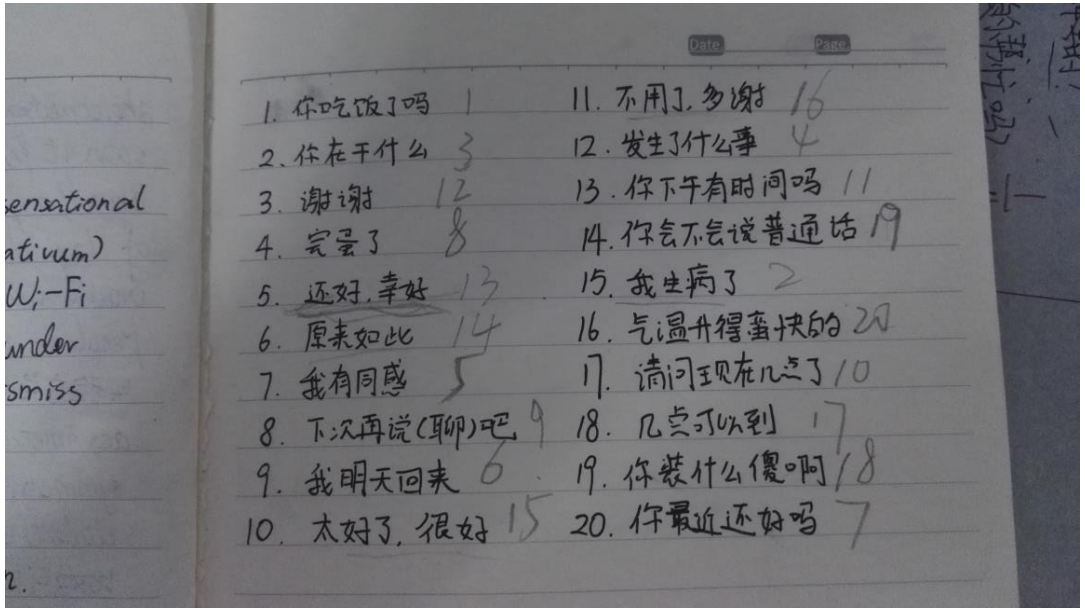
- Firstly, the Speaker of one dialect read 20 frequently-used sentences numbered from 1 through 20.

- While reading, the Listeners are asked to write down what they hear on a piece of paper.

- Then, the other Speaker ask the same questions to another group of audience.

Design of experiments

- The 20 questions we used



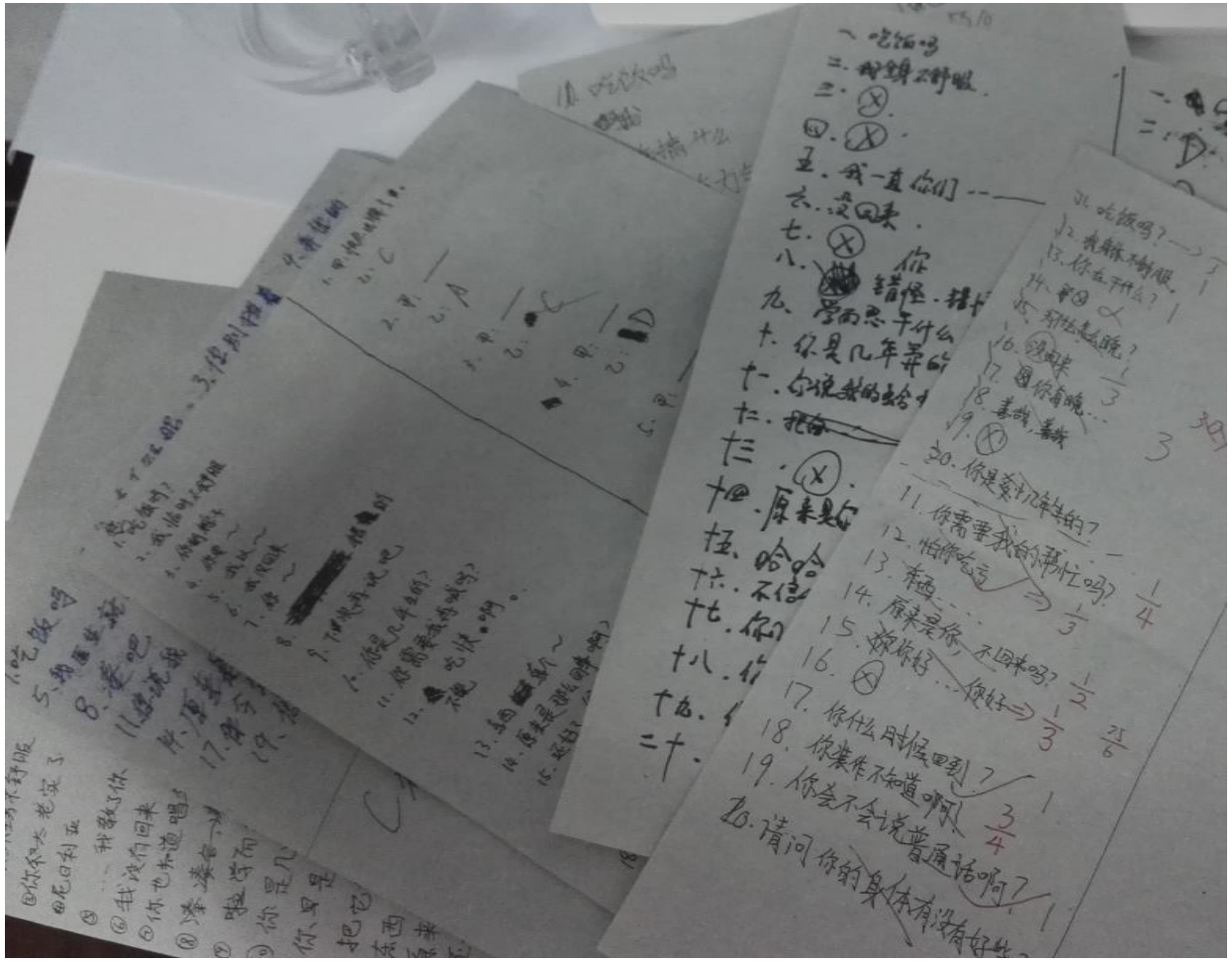
Translation:

1. Have you had lunch/supper?
2. What are you doing?
3. Thank you.

……

Design of experiments

- The answers we received from Listeners



To analyze the answers --the parameter

- **We use IDEA POINTS to analyze the answers.**
- An idea point is an idea stated in a sentence.

I will come back tomorrow.

3 idea points

We use idea point as a quantitative parameter to determine whether or not or how well one understands a sentence.

Additional experiment

- Language is easier to understand when placed in a certain scene.

- Therefore, we demonstrated another experiment besides the individual sentences.
- Here, Listeners listen to a conversation. Then they determine what the second person says.

A: What do you think of the food?
B: No. I won't come to this restaurant anymore!

To guess

Results

- The chart below shows how many idea points in the total of idea points a Listener gets.
- Percentage=$\frac{Number\ of\ idea\ points\ got}{Number\ of\ all\ idea\ points}$

Listener	Xiang dialect	Gaochun dialect	In Scene（Xiang Dialect）
1	35.83%	---	60%
2	45.41%	35%	80%
3	41.25%	38.33%	40%
4	30.40%	31.67%	60%
5	32.08%	15%	40%
6	32.50%	15%	40%
Average	36.25%	27%	53%

(The 1st Listener did not take part in the Gaochun dialect experiment)

Conclusion

- A person who only speaks Mandarin can understand 25% to 35% of the information given by an other-dialect speaker if the information is relatively individual from one another.
- In real scene, with the help of the environment, a person can understand more information provided in another dialect.