

Do you hear my voice? Different framings of COVID-19 children's vaccines in the mainstream and the social media in Taiwan

Ling-Yi Huang

Department of Humanities and Social Sciences

Mid Sweden University

Introduction

- On 1st of June, two infants, a 1-month-old boy and a 5-month-old girl, who were among the 2377 deaths from COVID-19 reported since the beginning of the pandemic have become the youngest people to die from the disease in Taiwan to date. These two cases brought the number of children 12 years old and younger who have developed severe COVID-19 infections to 29, of whom 12 have died. The higher death rate of children compared to other countries has raised the concern about the covid19 children's vaccines, especially the age group under 5 years old.
- Vaccines were offered to children aged 5-11 as their first shot and for adolescents aged 12-17 as their booster shot around the end of May, 2022 in Taiwan.

Research question

- What are the different framings and how is the attitude different toward the COVID-19 children's vaccines in the mainstream and the social media?

Topic modelling

- Computational methods such as topic modelling find patterns in large datasets. It reduces the complexity of language to a simplistic assumption, namely that certain words often occur together, and these co-occurrences – word clusters – carry traces of meaning. However, how can the topics be connected to frames?

From topics to framing

- A frame, in this definition, ‘links two concepts, so that after exposure to this linkage, the intended audience now accepts the concepts’ connection’ (Nisbet 2009: 17).
- Framing ‘endows certain dimensions of the complex issue with greater apparent relevance’ (Nisbet 2009:16–17).
- First, by observing the linkages between two concepts, shown by patterns of co-occurrence, we can observe a framing(Ylä-Anttila, Eranti and Kukkonen, 2022).
- Secondly, externally, the frames should mostly correspond to previously identified frames in similar data to ensure validity, but there must also be some room for discovery in order for topic modeling to be valuable(Ylä-Anttila, Eranti and Kukkonen, 2022).

Framings of vaccine

1. Bettam Castellini, Acampora, Barello (2022)

- Personal Risk
- Risk To The Collective Health
- Economic Risk

2. Loss and gain frames (Borah,2022)

Loss frames emphasize the unpleasant consequences or disadvantages if one does not comply with the recommended behaviors. On the other hand, gain frames underscore the desirable and pleasant consequences if one would comply with the recommended behaviors.

Framings of children vaccine from parents

3. Brunson and Sobo (2017),

- The Child's Best Interests
- Risk is Personal
- Unknown risks
- Risk is Socially Situated
- The Issue of Self-determination
- Decisions Are Not Forever

Method

- Web scraping from PTTGossip forum, PTTCovidnews forum, Ettoday news website between 01.06.2022-15.06.2022
- Data pre-processing
- Sentiment score
- LDA model
- Labels
- Framing analysis
- Compare the framings

Result of Sentiment score of the PTT Gossip forum content (01.06-15.06)

- Sentiment score=0.3720304293959916

(The value output range from 0 to 1 with 0 represents negative sentiment while 1 represents positive sentiment.)

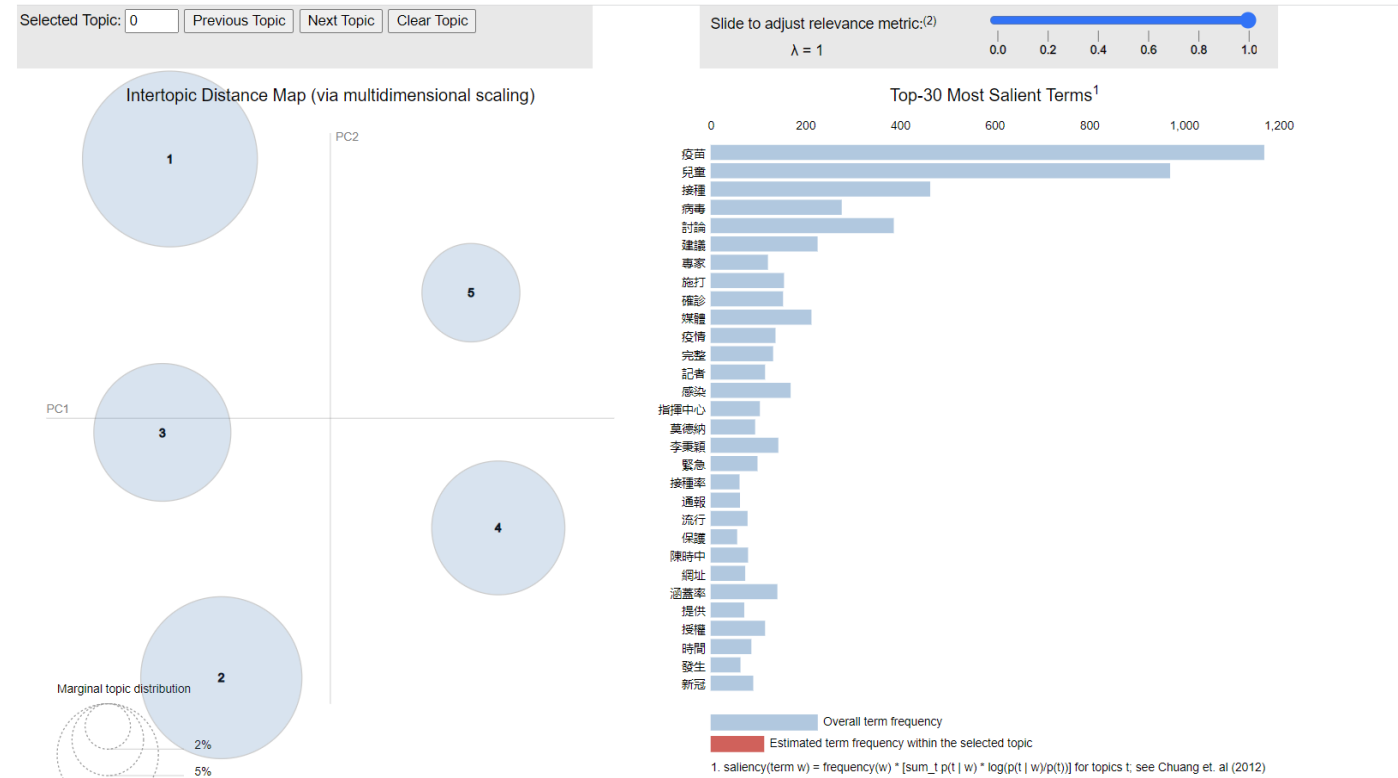
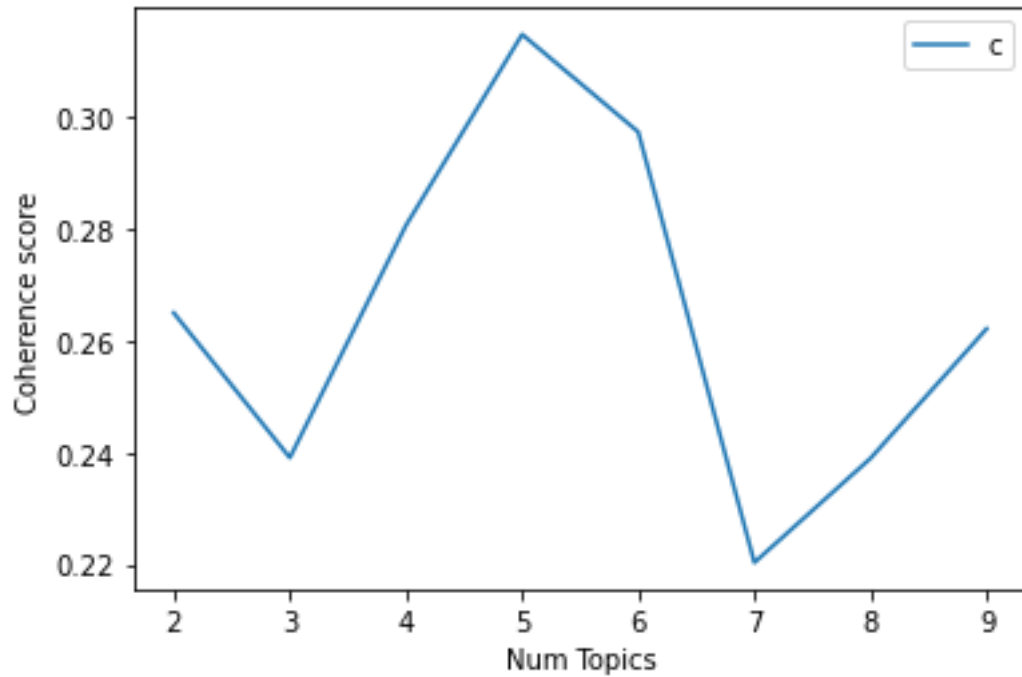
- Most positive claims = There is also a pair of parents who took their daughters to receive vaccination.....They think it is very convenient to get vaccinated at Chiang Kai-shek Memorial Hall and there are not many people.

Result of Sentiment score of the PTT Gossip forum content(01.06-15.06)

- Most negative claims:

Li Bingying pointed out that basically seeing a doctor within 24 hours will not be regarded as a delay, but according to past experience with enteroviruses, two third of them died within 24 hours after arriving at the hospital. This is the virus invading the life center and brain stem, which is usually violent and difficult to recover. There will be a certain percentage of mortality.

Result of LDA model of the PTT Gossip forum content (01.06-15.06)



Result of labels of the PTT Gossip forum content (01.06-15.06)

Based on the top 10 words with $\lambda = 0.4$

- Five Labels are assigned:
- 1. Vaccination coverage and statistics
- 2. Serious adverse reaction, parents, evaluation
- 3. Death cases and children, suggestion vaccination for children
- 4. Central government and command center
- 5. Expert and vaccine effectiveness

Result of framings of the PTT gossip forum (01.06-15.06)

1. Vaccination coverage and statistics
 - ➡ Statistics framing
2. Serious adverse reaction, parents, evaluation
 - ➡ Loss framing, The Issue of “parent”-determination
3. Death cases and children, suggestion vaccination for children
 - ➡ Loss framing, Persuasive framing
4. Central government and command center
 - ➡ Authority framing
5. Expert, vaccine effectiveness
 - ➡ Expert framing, gain framing

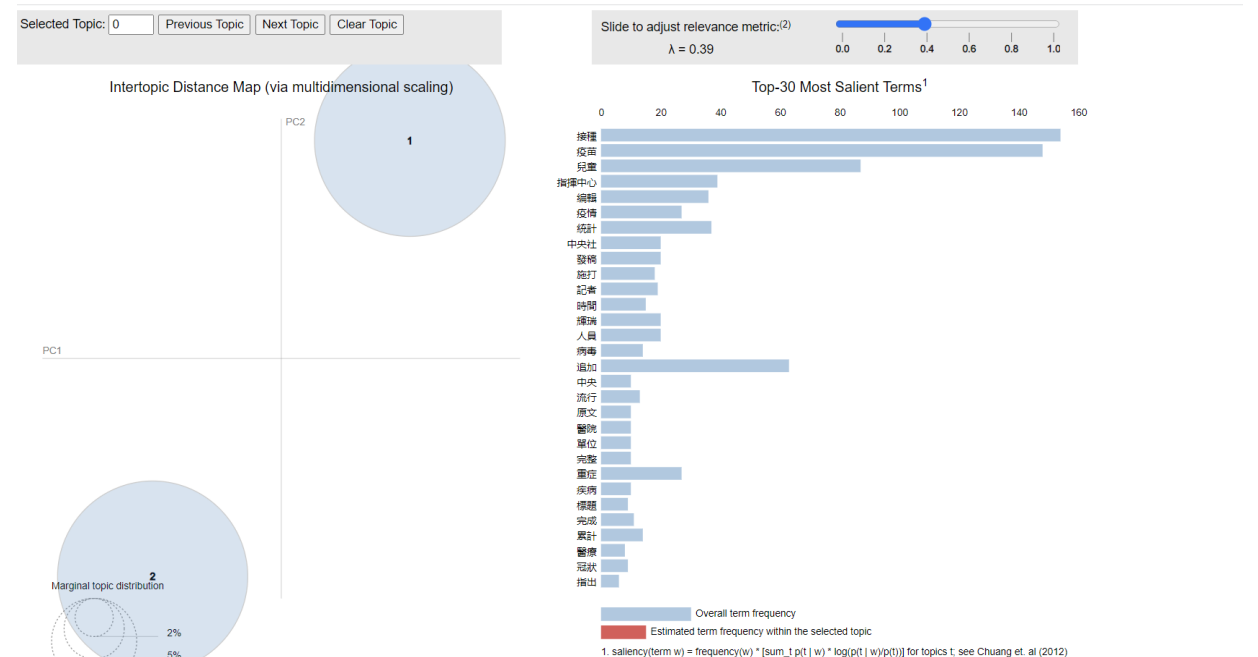
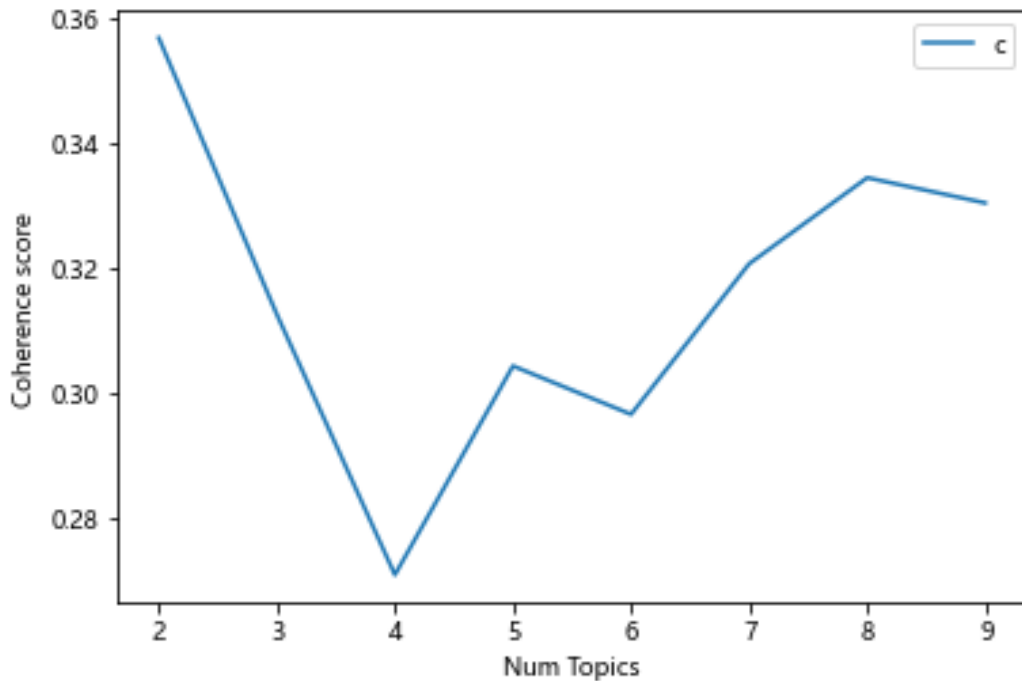
Result of Sentiment score of the PTT covid news (01.06-15.06)

- Sentiment score=0.34560011496573473
- Most positive claim=Wu Changteng, director of Pediatric Emergency Department of Chang Gung in Linkou, said: "A study in New York, USA found that if a child aged 5 to 11 years old, after receiving the first or second dose in four weeks, the protective power is 80%, and after three months, the protective power is still 50%. "

Result of Sentiment score of PTT covid news (01.06-15.06)

- Most negative claim: The expert meeting of the Advisory Committee on Infectious Disease Prevention and Vaccination Group (ACIP) recently decided to shorten the interval between 2 doses of childhood vaccines from 12 weeks to 4 weeks. Unless there are serious adverse reactions in the first dose, mixed vaccination is not suggested now.

Result of LDA model of the PTT covid news (01.06-15.06)



Result of labels and framings of the PTT covid news (01.06-15.06)

- Based on the top 10 words with $\lambda = 0.4$
- Two Labels are assigned:
 - 1. Vaccination coverage and booster vaccination (5-11 years old)
 - ➔ Statistic framing
 - 2. Severe cases, confirmed cases and children (under 5 years old)
 - ➔ Loss framing

Result of Sentiment score of the Ettoday headlines (01.06-15.06)

- Sentiment score=0.29986170730107753
- Most positive claim:

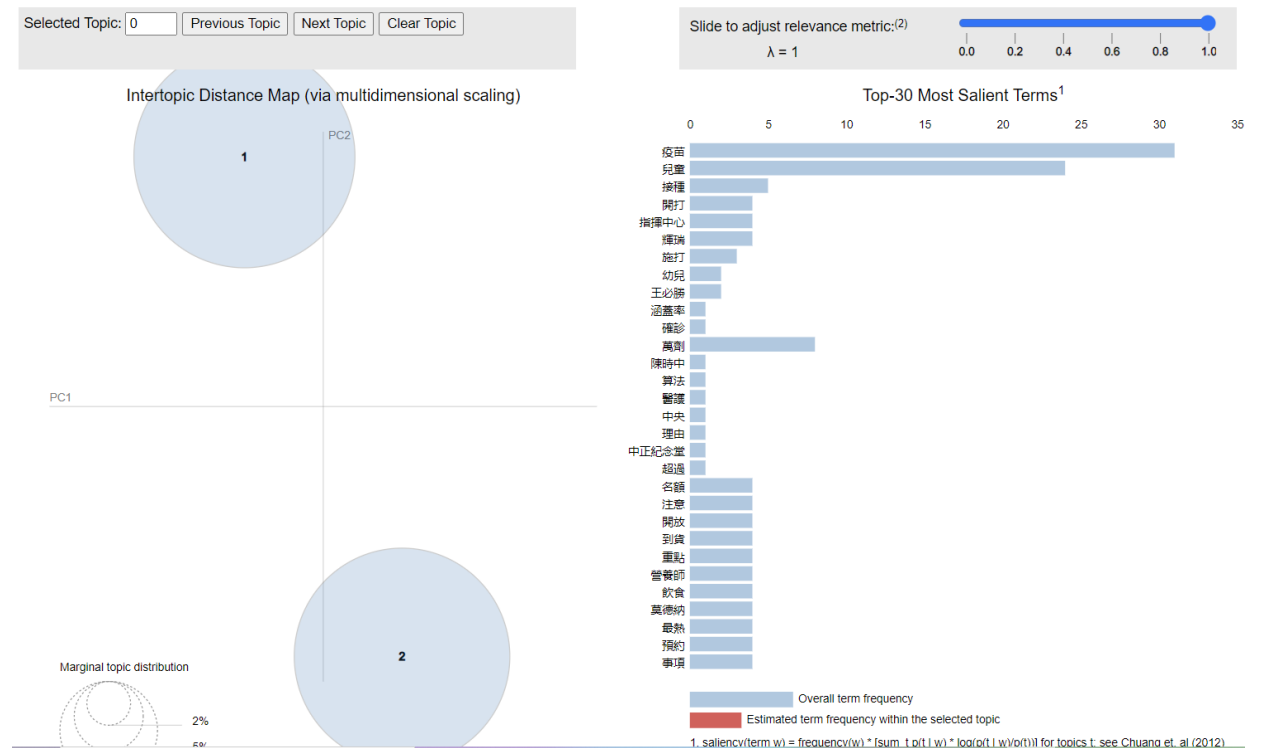
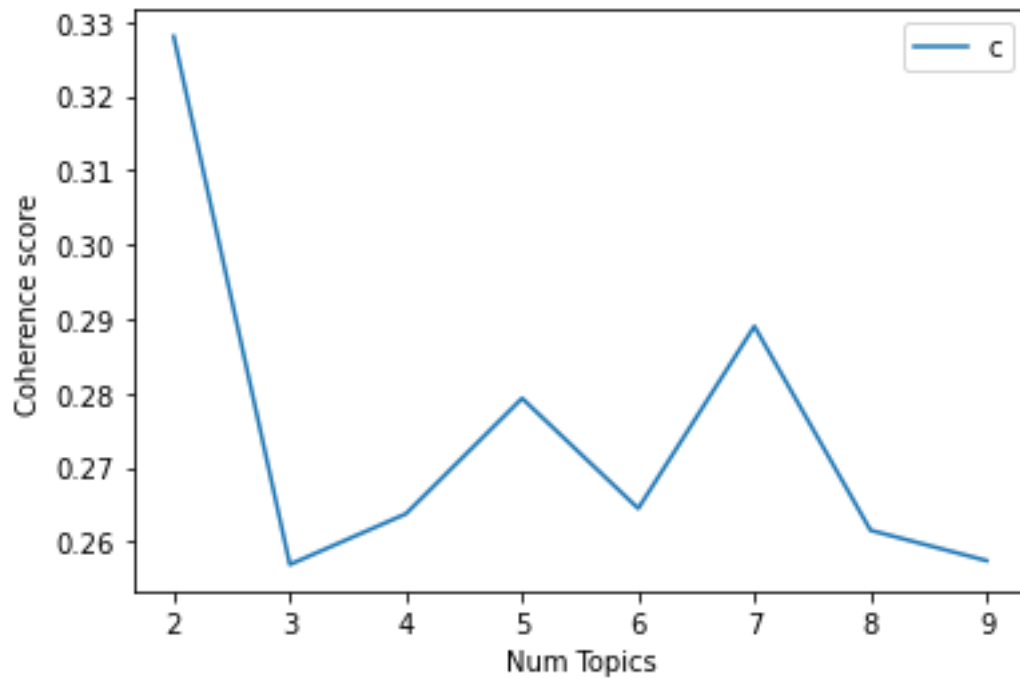
Enthusiastic people bought cookies as prize to encourage children to vaccinate to enhance protection

Result of Sentiment score of Ettoday headlines (01.06-15.06)

- Most negative claim:

What happens if the child is confirmed to have Covid but still received a vaccination within 3 months? Pediatrician answers: It is easy to misunderstand.

Result of LDA model of the Ettoday headlines (01.06-15.06)



Result of labels and framings of the ETtoday (01.06-15.06)

Based on the top 10 words with $\lambda = 0.4$

- Two Labels were assigned:
 - 1. Vaccination coverage and the types of vaccinations
 - ➡ Statistics framing
 - 2. Children between 5-11 years old can start to get the first shot, only 10 thousand doses, limited spots available
 - ➡ Hot offer framing

Discussions

1. Overall score for children's vaccination is below 0.5.
2. Surprisingly, users' attitudes on social media are more positive than main stream media. It might be due to the news of severe cases of children below five years old. Parents were more motivated to let their children to accept vaccinations.
3. Government news were more neutral meanwhile internet news website were least positive.

	Sentiment score
PTTGossip forum content	0.37
PTTCovidnews forum content	0.35
Ettoday news website headlines	0.30

Discussions

1. More topics/framings in social media than main stream media.
2. Different framings:

	Social media	Main stream media
1	Statistics framing	Statistics framing
2	Loss framing	Loss framing
3	Persuasive framing	Hot offer framing
4	The Issue of “parent”-determination	
5	Authority framing	
6	Expert framing	
7	gain framing	

Limitations

- 1. Short term data only 15 days /time series analysis
- 2. Purposive sampling/ Representative sampling
- 3. LDA model/BTM model

Future study is suggested to conduct the long term framing effects on users

Key References

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Thanks for the attention. Looking forward to your feedback!