Social media in COVID-19: Building trust or sowing stress?

Dr. Kokil Jaidka
What were the topics being discussed in Singapore regarding the pandemic?

What was the relationship of social media news with trust and stress?

What was the relationship of official information communication with trust and stress?
Presentation Highlights

Challenges in Language Analysis
Research background
COVID-19 in Singapore
Key research questions
Data
Key findings
Conclusions and Recommendations
Challenges in Language Analysis

There are a few challenges involved in using theory-driven dictionaries, such as the General Inquirer [5], Linguistic Inquiry and Word Count [2] and Diction [1].

1. They obscure the specific insights about words in context
2. They do not represent the constantly-evolving version of English used on social media (for e.g., ‘lol’, ‘bff’, ‘wtf’)
3. They are insensitive to cultural colloquia and different word senses (for e.g., ‘bloody; in a medical context’).
Fig 1: Data-driven Language Analysis

Background

Wellbeing

Background

Wellbeing

Stress

Background: Singapore

Widespread internet access

- 86% Internet penetration (N = 2014)
- 73% consider social media to be their source for news
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Social media news consumption comprised news from:
- Facebook, Instagram

Official social media communication comprised:
- Advisories
- Fake news debunking
Background: Singapore

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Main problem: Low trust in digital & social media news

- 37 – 48% Trust in Mothership.sg, The Online Citizen, All Singapore Stuff
- 40% concerned about false information from social media

Department of Communications and New Media
Faculty of Arts and Social Sciences

Reuter’s Institute Digital Report 2020

#STAYHOMEFORSG | 28 Oct 2020
Social media news consumption comprised news from:
• Facebook, Instagram etc.

Official social media communication comprised:
• Advisories
• Fake news debunking

I studied how the public reacted to it, as:
• Stress (Cohen, 1964; Guntuku, Buffone, Jaidka, Eichstaedt, & Ungar, 2019)
• Trust facet of the Big Five Personality model (Goldberg et al., 2006; Zamani, Buffone, & Schwartz, 2018)
Research Questions

What were the topics being discussed in Singapore regarding the pandemic?

What was the relationship of social media news with trust and stress?

What was the relationship of official information communication with trust and stress?
52,000
#stayhomeforsg etc; IG & FB posts
7 April 2020 – 1 June 2020
30 government, 1735 elite
2242 general users
Major themes were local updates and COVID-19 information, news and info seeking, daily life, and feelings.

Data description

Signals of Stress

- “FLATTEN THE CURVE. STAY AT HOME.
  We are doing our best to spread awareness VIRTUALLY as well as disconnecting by social DISTANCING! As a parent, as a mom, and as an individual we have come together from across the globe not just for our FAMILIES but for every single family out there! STAY HOME and maintain SOCIAL DISTANCING.”
Data description

Signals of Stress

• “FLATTEN THE CURVE, STAY AT HOME. We are doing our best to spread awareness VIRTUALLY as well as disconnecting by social DISTANCING! As a parent, as a mom, and as an individual we have come together from across the globe not just for our FAMILIES but for every single family out there! STAY HOME and maintain SOCIAL DISTANCING.”
• “Blessed Good Friday everyone! Can you find the heart imprinted Easter egg? :)”
Data description

Signals of Stress

Spikes and dips in Stress appear to synchronize with key outbreak events and preventive measures.
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“So this is how it feels like to be trapped. Hello from the inside”
Data description

Signals of Stress

Spikes and dips in Stress appear to synchronize with key outbreak events and preventive measures.

“The Mufti of Singapore and the Muslim community would like to wish the Buddhist community a Happy Vesak Day! May their life be filled with blessings, peace and happiness on this day of enlightenment.”
Signals of Stress

Spikes and dips in Stress appear to synchronize with key outbreak events and preventive measures.

"Please please help. All details in the reproduced post below."
Signals of Trust

- “I suddenly realized one day that my freshly unmoulded chiffon cake looks so much like a toilet roll already with its hole in the middle. Hope this cute cake made you smile amidst this “circuit breaker”!”

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- Spikes and dips in Trust are uncorrelated with dips and spikes in Stress
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Days with more digital news updates were also days of low stress, independent of channel. The Granger causality relationship is significant and bidirectional.

\( r = -.27, p < .001 \)

No significant relationship between trust and official news, but news from peers has a negative effect.

\( r = -.22, p > .1 \)
Information and Trust

Days with more official posts dispelling issuing advisories were also points of high trust. The Granger causality relationship is significant and bidirectional. 

\[ .28 < r < .32, p < .001 \]
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\[ .28 < r < .32, p < .001 \]

The relationship was not statistically significant if the source was not an official account.

\[ -.07 < r < .05, p > .1 \]
Summary & Limitations

Correlation isn’t causation 😊

Sharing news updates and Stress

Social trust is an important counteractant to pandemic stress triggered by social media news use.

Official information and Trust

Information, news and advisories obtained directly from official channels are associated with greater trust.

No statistical power: Official advisories and Stress

Advisories from official channels reduce stress. An opposite relationship seems to hold when this comes from one’s peers.
Recommendations

- Social media analysis allows live opinion tracking and complements survey data collection.
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- Regular information updates and advisories appeared to help Singaporeans to manage their stress.
Resources

- L1: https://liwc.wpengine.com/
- L1: http://lexhub.org/
- L1: https://github.com/chandrasg/lexica
- L1, SE Asia sentiment: https://sentic.net/downloads/
- L2: Wordstat, QDA miner
- L2, L3: https://github.com/kj2013/social-media-listening
- L1, L2, L3: https://github.com/dlatk/dlatk
References


The StayHomeforSG dashboard

- Factchecks and Advisories.
- Self-assessment tools. Were you a true Circuitbreaker? Are you ready for Phase 2?!
- Recommended resources for self-care
Thank you

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Implementation

First, transform users’ social media language usage into normalized frequency distributions.

- **Macro-level analysis using Lexica**: Apply the General Inquirer, Diction and LIWC dictionaries to obtain high-level descriptions in terms of psychological & behavioral constructs which are associated with an outcome.

- **Data-driven analysis using Topic models**: Use Latent Dirichlet Allocation (LDA) or the LDA topic models provided by Schwartz et al [3], and calculate correlations over all users to describe the language topics which correlate with an outcome.

- **Micro-level Analysis using words and phrases**: Identify the individual words or phrases (or 1to3-gram) in the vocabulary, that are strongly correlated with an outcome.
Dictionary-based approach
- Organize and summarizes language results
- Comparable across studies and datasets
- Single, ambiguous words can drive dictionary scores

LDA Topic models
- Specific thoughts and emotions (organized by context)
- Disambiguates word meanings
- Misses stop-words (like pronouns)

N-grams
- Specify thoughts and emotions
- All results shown are individually regressed
- Places word in context
- Best used as for insights and comparison