Does formal or informal institution prevail regarding the perception of wearing masks during the COVID-19 pandemic? Evidence from French Tweets

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Abstract

With the spread of COVID-19, many countries have issued different policies and regulations on wearing masks to prevent the pandemic spread. While wearing surgical masks is a major way to prevent COVID-19 in Asian countries, it is controversial in the western world. French nations were sceptical on wearing masks as it is associated with religion freedom suppression, gender inequality or even the infamous "the veil in school" (le voile à l'école) incident. As the COVID-19 problem escalated, wearing masks proved to be effective in reducing the spread of virus and many French-speaking nations had to wear masks according to regulations and policies. This raised the questions, 'What is the French nations' viewpoint?' and 'Does formal or informal institution prevail in wearing masks during COVID-19?' Through data mining from Twitter, this study attempted to investigate how wearing mask ('port du masque') policies and regulations were perceived by French-speaking countries during COVID-19. In total, 1288 French Tweets were collected and analysed. While it may be expected that French Tweets regarding wearing masks is primarily linked to health and culture, French Tweets on wearing masks were mainly linked to laws and policies.
Keywords: COVID-19, French, Twitter, Wearing masks, Regulation, Policy, Data mining

Introduction

SARS-CoV-2 caused the global COVID-19 outbreak (Dubert et al., 2020). Although it spreads through nasal discharge, airborne particles, or saliva (Magazzino, Mele & Schneider, 2020), the necessity to wear a mask was initially considered unimportant. On 27th January 2020, the World Health Organization (WHO) recommended that it is unnecessary to wear a mask if a person had no COVID-19 symptoms, only suspected COVID-19 infected people should wear a mask (WHO, 2020). Radio Monte-Carlo (2020) reported that only people in high risk areas should wear a mask wear a medical mask. In general, the media and experts in Europe had a negative attitude towards to protect from COVID-19 between February and March 2020.

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The necessity to wear a face mask by a healthy individual to reduce the risk of COVID-19 transmission remained controversial at the beginning of the pandemic despite the evidence showing the importance of wearing masks. For example, within the first 100 days (31st December 2019 to 8th April 2020), 961 COVID-19 patients were diagnosed in HKSAR. The COVID-19 cases in Hong Kong (129.0 per million population) was significantly lower than France (1151.6), Germany (1241.5), and Italy (2250.8), which indicates that community-wide mask wearing controls COVID-19 by reducing the emission of infected saliva and respiratory droplets from individuals with subclinical or mild COVID-19 (Cheng et al., 2020). Legislations of wearing mandatory masks in countries such as France, Canada (Totrontot, 2020), the UK etc. followed to prevent the virus spreading. On 15th October 2020, the French government witnessed the deterioration of the virus cycle in the previous 10 days and announced the implementation of measures including a curfew (Legislation.Gov.UK, 2020).

However, people have distinct perceptions of wearing masks and different reactions to such policies. Through data mining from Twitter, this

study attempted to investigate how wearing mask policies and regulations were perceived by French-speaking countries, the second most widely used language in diplomacy (France Diplomacy, 2020), and their reaction to policies and regulations about wearing masks.

French perception on wearing masks: Classical vs modern

The origin of surgical masks dates from the end of 19th century. Doctors have benefited from the anti-epidemic face-worn mask for protection from airborne bacteria from open wounds during surgery (Spooner, 1967). Nevertheless, French people have been reluctant to wear masks since classical times. A French doctor, Clot-Bay, painted the costume of a plague doctor with a mask in 1840 depicting it as a ghost-like horrible and terrifying subject (Champeil-Desplats, 2012).

Regarding the law prohibiting face concealment related to religious freedom and the infamous "the veil in school" (le voile à l'école) incident, the modern "veiled woman" is a symbol of women's subordination to men, or resistance to western hegemony". Bilge (2010) indicates that the Muslim "veiled woman" is "a symbol of women's subordination to men, or an act of resistance to western hegemony", a refusal to integrate and failing of multiculturalism (Williamson & Khiabany, 2010). All these offer clues on why the French were reluctant to wear masks at the beginning of the COVID-19 outbreak.

However, the escalation of the epidemic made a mask part of our lives. France's Academy of Medicine of France indicated that wearing a mask was compulsory for outings from the beginning of April 2020 (Le Journal du Femme Santé, 2020).

Formal and informal institutions affect human behaviours

Informal institutions have unwritten socially shared rules that are created, communicated, and enforced outside official channels (Bogaards, 2019), while formal institutions have rules and regulations set in black and white. While formal and informal institutions affect human behaviours and decision making, formal or informal institutions may be stronger. Much research has studied formal and informal institutions' impact on decision making etc. e.g. Tu, Yue, Liu and Crabbe (2020) examined the legal quality and environmental disclosure on firm value after the passing of the Environmental Protection Tax Law in China.

Our research question is, do formal or informal institutions affect the French's perception of

wearing masks more? To the best of our knowledge, no prior study has been conducted, hence, this research attempted to examine this issue via Tweet mining to fill this research gap.

Social media for studying people's perceptions

As of January 2018, approximately 4.021 billion people worldwide used the Internet and 3.196 billion people used social media. Online discussions generate huge unstructured text data (Curiskis et al., 2020), with people increasingly using social media tools e.g. Twitter, to express themselves and their opinions about different issues (Belkahla, Mellouli & Trabelsi, 2019), complementing or even replacing traditional data. Thus, these posts may have value and can be gathered at low cost (Gal-Tzur et al., 2014).

Extracting people's comments from social media has become increasingly important for policy makers; government officials may consider this information when making decisions (Belkahla, Mellouli & Trabelsi, 2019). Social media opinion mining better serves than surveys and interviews as these traditional tools have very low response rates, leading to under representative opinions on the issue. For example, previous studies regarding comfort ranges were obtained via interviews and questionnaires with a small number of individuals. Tweets containing weather-associated keywords can be collected, then linked to real-time meteorological data acquired from the locations near where the Tweets were posted (Giuffrida, Lokys & Klemm, 2020).

Research method

Mining Tweets through NodeXL for research is widely adopted in academia. For example, Ahmed et al. (2020) studied #5GCoronavirus' Twitter data from 27th March 2020 to 4th April 2020 in the United Kingdom, Søreide et al. (2019) investigated participants' Twitter activity during the 38th ESSO conference, Mackenzie and Gulati (2020) reviewed the impact of social media on virtual scientific sessions during Covid-19 and Chandrasekaran examined the main themes and topics of English COVID-19 Tweets posted by individuals to explore the trends regarding COVID-19-related Tweets, topics, and sentiment changes before to after the disease was considered a pandemic (Chandrasekaran et al., 2020).

NodeXL connects to Twitter Search API, which allows the collection of previous Tweets (NodeXL, 2020), thus, the data collected is publicly available. The Twitter privacy policy also notes that: "[b]y publicly posting content when you Tweet, you are

directing us to disclose that information as broadly as possible, including through our APIs, and directing those accessing the information through our APIs to do the same. To facilitate the fast global dissemination of Tweets to people around the world" (Twitter, 2020).

We collected French's perceptions on wearing masks by using the French term 'port du masque' ('mask-wearing') via NodeXL to send queries to the Twitter server. All identifiable personal information, such as ID, IP address and avatar were anonymised. Conway claimed that studying Tweets brings great benefits to public health (Conway, 2014). The results of Tweets were tokenised and parse into terms, as per Li et al. (2019). In total, 1288 French Tweets were collected: 1109 from France, 28 Tweets from Cameroon, 41 Tweets from Morocco and 110 from Tweets in French in the absence of geographical identity.

What are French person's perceptions of wearing masks during Covid-19?

Our research results (Table 1) indicate that most discussion was related to laws and policy changes. In France, wearing a mask was compulsory on all Air France flights, with the Supermarkets Intermarché and Netto delivering 50 million single-use masks between 13th April and 2nd May 2020 (Air France, 2020). In Morocco, it is mandatory to wear masks in grocery stores (Le Figaro, 2020), and the government in Cameroon made it obligatory from 13th April 2020 to wear masks in public to slow the spread of COVID-19 (Le Monde, 2020). Many Tweets were related to 'mandatory', indicating that people wear masks due to the mandatory requirements. Theoretically speaking, many factors such as culture and norms affect people's perception of wearing masks, however, most were not reflected in French Tweets. Most Tweets on masks were related to its mandatory requirements, regardless of whether the Tweets were from France, Morocco, or Cameroon.

Conclusions

While wearing surgical masks is a major approach to prevent COVID-19 spread in Asian countries, it is controversial in the western world and France is no exception. One may expect that people's perception of wearing masks is primarily linked to health beliefs, however, French Tweets mainly discussed the mandatory requirements of wearing masks, with formal institutions in France, Cameroon and Morocco etc. imposing a stronger impact on wearing masks than health concerns. The research contributes academically by filling the gap in the literature regarding how French nations perceive masks during COVID-19, and practically informs policy makers regarding how these nations view the newly implemented policy regarding masks. It also demonstrates the possibility of gauging public opinion regarding new policy implementation. In the future, it would be worthwhile to compare and contrast more nations' opinions in Twitter as well as other social media, such as YouTube.

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Table 1. **French Tweets' content mentioning 'port du masque' ('mask-wearing') from 26th March to 14th April 2020**

France	Count	N
wearing a mask	207	3
mandatory mask	38	2
wearing the mandatory mask	37	4
May 11	24	2
wearing the mask https	9	4
mandatory wearing of the mask	9	4
mandatory mask	9	3
mandatory wearing	9	2
wearing a mask is mandatory	8	5
mask is mandatory	8	3
Emmanuel Macron	7	2
not wearing a mask	6	4
wearing the generalised mask	6	4
mask will be generalised	6	3
wearing a mask	6	3
April 13	6	2
generalised mask	6	2
non-wearing	6	2
wearing a	6	2
containment until May 11	5	5
wearing the mask will be widespread	5	5
containment until 11	5	4
until May 11	5	4
until 11	5	3
Monday, April 13	5	3
mandatory wearing	5	3
April 2020	5	2
containment up to	5	2
now mandatory	5	2
Monday 13th	5	2
Morocco	**Count**	**N**
is mandatory	19	2
wearing a mask is mandatory	18	5
mask is mandatory	18	4
mandatory and	15	2
grocery stores	14	2
mask is mandatory and	13	5
in all grocery stores	13	4
mask is mandatory and	13	4
is mandatory and	13	3
all grocery stores	13	3
Morocco	**Count**	**N**
Christian confined to Morocco here	12	5
confined to Morocco here on	12	5
find them in all	12	5
is mandatory and it is	12	5
here wearing the mask	12	5
Morocco here the wearing of the	12	5
mandatory and there are	12	5
found in all grocery stores	12	5
morocco here on	12	4
Christian confined to Morocco	12	4

	Count	N
confined to Morocco here	12	4
mandatory and it is	12	4
Christian confined to the	12	3
confined to Morocco	12	3
morocco here on	12	3
Christian confined	12	2
Cameroon	**Count**	**N**
April 13	11	2
wearing a mask	10	4
Monday 13th	10	2
Monday, April 13	9	3
mandatory mask	9	2
wearing the mandatory mask	8	4
as of this Monday	8	3
Mandatory mask	8	3
This Monday	8	2
as of Monday, April 13	7	5
wearing the mandatory mask as soon as	7	5
Monday, April 13	7	4
as of Monday the 13th	7	4
mandatory mask as soon as	7	4
Monday the 13th	7	3
mandatory mask as soon as	7	3
mandatory as soon as as	7	2
COVID -19	5	2
Cameroon wearing the mask	4	5
Monday, April 13, 2020	4	5
mandatory mask from this date	4	5
Monday, April 13, 2020 https	4	5
mandatory mask from this Monday	4	5
mandatory as of Monday 13th	4	5
April 13, 2020 https	4	4
Cameroon COVID -19 wearing	4	4
Monday, April 13, 2020	4	4
mandatory mask from this date	4	4
mandatory as of this Monday	4	4
mandatory as of this Monday	4	4
April 13, 2020	4	4
April 2020 https	4	3
COVID Cameroon -19	4	3
Cameroon wearing	4	3
COVID -19 wearing	4	3
mandatory from this date	4	3
April 2020	4	3
COVID Cameroon	4	2
as of Monday	4	2
Unidentified locations	**Count**	**N**
April 18	15	2
COVID -19	14	2
mandatory masking	11	5
mandatory mask	11	2
wearing the mandatory mask	9	4
Saturday, April 18	9	3
April 2020	9	2
Saturday 18th	9	2

	Count	N
any offender	9	2
starting Saturday, April 18	8	5
starting Saturday 18	8	4
April 18, 2020	8	3
starting Saturday	8	3
mandatory wearing	8	2
Saturday, April 18, 2020	7	4
now mandatory	7	2
April 18, 2020. any offender	6	5
citizen as of Saturday	6	5
community or bavette is now	6	5
now mandatory for any citizen	6	5
wearing the mask is now	6	5
Saturday, April 18, 2020. All	6	5
April 18, 2020. All	6	4
April 2020. any offender	6	4
bib is now mandatory	6	4
now mandatory for everything	6	4
community mask or bavette	6	4
mask is now mandatory	6	4
mandatory for any citizen	6	4
from April 18	6	4
wearing a community mask	6	4
any citizen to count	6	4
2020. any offender	6	3
April 2020. All	6	3
bib is now	6	3
Unidentified locations	**Count**	**N**
citizen to count	6	3
community or bavette	6	3
mask is now	6	3
mask is mandatory	6	3
mandatory from	6	3
mandatory for everything	6	3
from the 18th	6	3
alpha condé	6	2
community mask	6	2
every citizen	6	2