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House of Lords Communications and Digital Select Committee inquiry: The future of news: impartiality, trust, and technology

C-TRUTH Introduction and Background

During the pandemic, a multidisciplinary team of researchers at the University of Wolverhampton and Dutch researchers working at various universities including the Free University (Netherlands) and the Meertens Institute (Netherlands) collaborated to understand the impact of fake news on the public consciousness. The C-TRUTH project researchers mapped and analysed the public's engagement with fake news during the pandemic through a multidisciplinary approach that involves analysis of Twitter activity as well as online surveys in English and Dutch. They assessed the risk of misleading and inaccurate news stories and the impact on people's behaviour, through analysis of the socio-cultural, cognitive, psychological, and other demographic factors that are involved in the public's engagement with disinformation during the crisis.

During this time the Principal Investigator Professor Sebastian Groes (English Literature, Wolverhampton) and Dr Tom Mercer (Psychology, Wolverhampton) were in touch with the Cabinet Office and the Counter Disinformation Cell at the Department for Digital, Culture, Media and Sport (DCMS), who engaged with our research. Indeed, in the Netherlands our research was used by the Dutch National Institute for Public Health and Environment (RIVM), which coordinated the response to Covid-19 during the pandemic. On various occasions, Professor Groes presented findings on BBC's Digital Planet radio programme.

The data analysed¹ was gathered between May and October 2020, but we think that our research will be used for the Communications and Digital Committee's inquiry into the future of news: impartiality, trust and technology as many aspects of our work speak to the Committee's remit. The novelty of our work lies in its understanding of the relationship between social media use, news consumption and the susceptibility to mis- and disinformation stories. Below you will find the highlights of our findings based on statistical analysis of survey data; a detailed methodology; and some recommendations on the basis of our research. We would be more than welcome to elaborate on our research in writing or at a hearing.

Overview of Our Findings

What impacts (positive and negative) do large technology platforms and online news aggregators have on the UK's news environment, including media plurality?

¹ For this analysis, only men and women were included, as part of the assessment of gender. This was due to few participants in the other gender categories.

- **Those who engaged with a wider range of news websites were better at judging false stories to be unlikely, and true stories to be likely. These effects were heightened within the UK sample.**
- In contrast, those with more positive attitudes towards social media were more likely to rate the false stories as plausible.
- **Participants based in the UK were less successful at rating the likelihood of true and false stories, compared with participants based in the Netherlands.** Additionally, in comparison with the Dutch sample, UK-based participants used a smaller number of news websites, but had more positive attitudes towards social media, and used a greater range of social media platforms.

What factors affect trust in news and how might this evolve?

b) What impact do concerns around disinformation have on trust in the information environment? (And to what extent does this differ between different sections of society?)

- Generally participants were effective at judging false stories to be unlikely, but there were some exceptions. Most dramatically, around 30% of the sample believed that Covid-19 could have emerged due to people eating bats. In contrast, only around half of UK-based participants rated a true story about Russian disinformation during the pandemic to be likely (compared with 68% in the Dutch sample).
- Those with a higher conspiracy mentality were less effective at rating true stories as likely, and false stories as unlikely, suggesting a proneness to disinformation. **Conspiracy mentality was higher within the UK than the Dutch sample, and there was evidence that conspiracy mentality was linked with news consumption and social media usage.** Specifically, higher conspiracy mentality scores were associated with greater usage of a range of social media websites, but less usage of news websites.

Method

Sample

A large-scale survey was conducted between May and October 2020, in the early stages of the Covid-19 pandemic. The sample included responses from over 1,000 individuals ($N = 1,031$) from around the world, including 491 individuals based in the UK. Further information about the age and gender of the sample is shown in Tables 1 and 2.

Table 1

Age range of participants in the study

Age range	Number	%
18-24	77	7.5%
25-34	152	14.7%
35-44	244	23.7%
45-54	234	22.7%
55-64	210	20.4%
65-74	104	10.1%
75-84	9	0.9%
85 or over	1	0.1%

Table 2

Gender information about participants in the study

Gender	N	%
Female	523	50.7%
Male	472	45.8%
Prefer not to say	23	2.2%
Prefer to self-describe	7	0.7%
No response	6	0.6%

Materials and Procedure

During the survey, which was completed online, participants provided some basic demographic information (age, gender, education, religion, ethnicity, and the country where they were currently living), and indicated the news websites/sources and social media platforms they used. Engagement with social media was further assessed by asking people about the average amount of time per day they spent on social media, and the (approximate) number of friends and followers they had on their favourite social media site. Finally, participants answered questions about their usage and attitudes towards social media (termed Social Media Attitudes/**SMA**), which included six questions about the extent to which social media is important to them. Scores can vary from 6 to 30, with a higher score indicating more engagement with, and positive attitudes towards, social media. The last formal scale was the Conspiracy Mentality Questionnaire (**CMQ**), which has five questions that are designed to measure the extent to which a person believes in conspiracies in general. A higher score indicates greater conspiracy mentality and scores can vary from 5-25.

In the main part of the task, participants were given 13 different stories – 10 were false and three were true (shown in green font):

- Bill Gates is responsible for the Covid-19 virus as he has created nanobots that run on 5G networks and who infiltrate people's bodies

- The Covid-19 virus is a bioweapon made in a lab
- The Covid-19 virus was developed by pharmaceutical companies so they can earn a lot of money by selling a vaccine
- There are effective antibacterial credit cards
- Covid-19 was developed to kill elderly people, to save money on pensions
- Some Covid-19 hoaxes are being spread by Russian trolls for destabilizing purposes
- The Covid-19 virus jumped from animals to humans as a result of natural evolution
- The Covid-19 virus is a hoax to cover up the effects of 5G towers
- The Covid-19 virus is Mother nature's revenge for humanity polluting the Earth
- It has been proven that the Covid-19 virus emerged as a result of people eating bats
- The Covid-19 virus was accidentally created and escaped, and now officials are covering up their mistake
- It doesn't happen often, but animals can catch the Covid-19 virus from people too
- The US created the Covid-19 virus in order to destroy the Chinese economy

For each story, participants were asked to rate how likely they judged it to be, on a five-point scale ("Extremely unlikely", "A little unlikely", "Neither unlikely or likely", "A little likely", and "Extremely likely"). They also indicated whether they had previously heard about the story. From these scores, it was possible to calculate the overall plausibility of the true and false stories (by summing responses to individual stories) and the overall familiarity with these stories.

In addition, engagement with news websites was calculated by adding up the number of websites they reported using. In a similar fashion, engagement with social media platforms was calculated in the same way, adding up the number of platforms participants reported using.

Results/Findings

In all analyses below, responses not provided to specific questions have been excluded.

Rating the stories

Ratings of the 13 stories are shown in Table 3. While ratings of these headlines was on a five-point scale, data below have been recategorised, so “Extremely unlikely” and “A little unlikely” are grouped together, as are “Extremely likely” and “A little likely”.

Table 3

Ratings of individual stories by the full sample

	Extremely unlikely/unlikely	Neither likely or unlikely	Likely/Extremely likely	Prior familiarity
Bill Gates and 5G	98.2%	1.3%	0.5%	63%
Lab-made bioweapon	81%	7.3%	11.6%	94%
Pharmaceutical company creation	92.3%	3.5%	4.3%	53%
Antibacterial credit card	80.5%	14.4%	5.2%	11%
Developed to kill elderly	96%	1.7%	2.2%	39%
5G towers	98.1%	1.2%	0.7%	86%
Mother nature’s revenge	73.9%	14%	12.1%	65%
Eating bats	46.2%	25.2%	28.7%	87%
Accidentally escaped	71.1%	11.4%	17.5%	83%
US creation	95.1%	3.4%	1.5%	41%
Spread by Russian trolls	26.5%	15.1%	58.3%	59%
Natural evolution	21%	15.1%	63.9%	74%
Animals can catch covid-19 from people	14.3%	14.4%	71.4%	86%

In general, most false stories were judged to be unlikely, though there was much more uncertainty around the “Eating bats” story, with almost 30% of respondents rating this as likely. Two other stories – Covid-19 accidentally escaping or being “Mother nature’s revenge” – were judged as unlikely by fewer than three-quarters of the sample, and over 10% of the sample indicated that Covid-19 could have been manufactured as a weapon. Overall, participants did

better at judging the true stories as likely, though the story concerning Russian trolls received the least endorsement.

These ratings were then assessed further by comparing participants based in the UK against those based in the Netherlands. Results are shown in Table 4.

Table 4

Ratings of individual stories by participants based in the UK and the Netherlands

	UK (N = 491)			Netherlands (N = 308)		
	Unlikely	Neither	Likely	Unlikely	Neither	Likely
Bill Gates and 5G	98.8%	1%	0.2%	97.7%	1.6%	0.6%
Lab-made bioweapon***	74.3%	8.1%	17.6%	88.3%	6.8%	4.9%
Pharmaceutical company creation*	90.6%	3.5%	5.9%	94.5%	2.6%	2.9%
Antibacterial credit card***	77%	15.9%	7.1%	86.3%	11%	2.6%
Developed to kill elderly**	94.5%	2.4%	3%	97.4%	1.3%	1.3%
5G towers	98.4%	0.6%	1%	97.4%	1.9%	0.6%
Mother nature's revenge	74.6%	13.4%	12.1%	74.1%	13.3%	12.7%
Eating bats	46.9%	22.9%	30.2%	42.5%	27.6%	29.9%
Accidentally escaped***	67.7%	9.6%	22.8%	77.2%	11.4%	11.4%
US creation***	93.7%	4.1%	2.2%	97.1%	2.6%	0.3%
Spread by Russian trolls***	32.2%	17.3%	50.5%	18.2%	14.3%	67.5%
Natural evolution	24.5%	13.6%	61.9%	19.8%	15.9%	64.3%
Animals can catch covid-19 from people***	23.4%	17.5%	59.1%	4.2%	10.7%	85.1%

Note. * $p = .05$; ** $p < .005$; *** $p < .001$. The non-parametric Mann-Whitney U test was employed for individual comparisons.

When comparing the two groups on the overall plausibility of the true and false stories using formal statistical analyses, participants based in the Netherlands did significantly better in each case, as indicated by an independent-samples t -test²

(true stories: $t[701.52] = -8.72, p < .001, d = -0.62, UK_{Mean} = 10.21, Netherlands_{Mean} = 11.87$; false stories: $t[738.94] = 4.07, p < .001, d = 0.30, UK_{Mean} = 16.12, Netherlands_{Mean} = 14.77$). For the true stories, a medium-sized effect emerged, whereas for the false stories, the effect was small but strongly significant. And as indicated in Table 4, differences between the UK and Dutch groups were also observed for many individual stories.

Predicting responses to false stories

Multiple regression was used to further analyse the data. This allows a series of individual variables (the predictors) to be used to predict another variable (the outcome). The regression assesses the effect of all predictors (the model assessments), and then breaks down the effect of individual predictors.

The first regression model aimed to predict the total plausibility of the false stories in the full sample ($N = 869$). Predictors included total familiarity with the false stories, gender (men vs. women), age, the total number of news websites used, the total number of social media websites used, the SMA score, the CMQ score, the number of friends and followers on social media, and average usage of social media per day in the past week.

A significant model was found ($p < .001$), with the nine variables explained 27% of the variance in the plausibility of false stories. When breaking this down into individual predictors, there were five significant results:

- Generally, a higher number of friends/followers predicted a lower score on fake story plausibility. However, this effect should be treated with some caution as the size of groups was imbalanced.
- ***The greater range of news websites used, the lower the score on fake story plausibility (See Figure 1).***
- ***A higher conspiracy mentality score, as indicated by CMQ, was associated with a higher score on fake story plausibility.***
- ***Women scored more highly than men on fake story plausibility.***
- ***A higher SMA score, indicating more positive attitudes towards social media, was associated with a higher score on fake story plausibility (See Figure 2).***

² The non-parametric Mann-Whitney U test revealed the same outcome.

Figure 1

Scatterplot Indicating the Relationship Between the Plausibility of All Fake Stories and the Number of News Websites Used

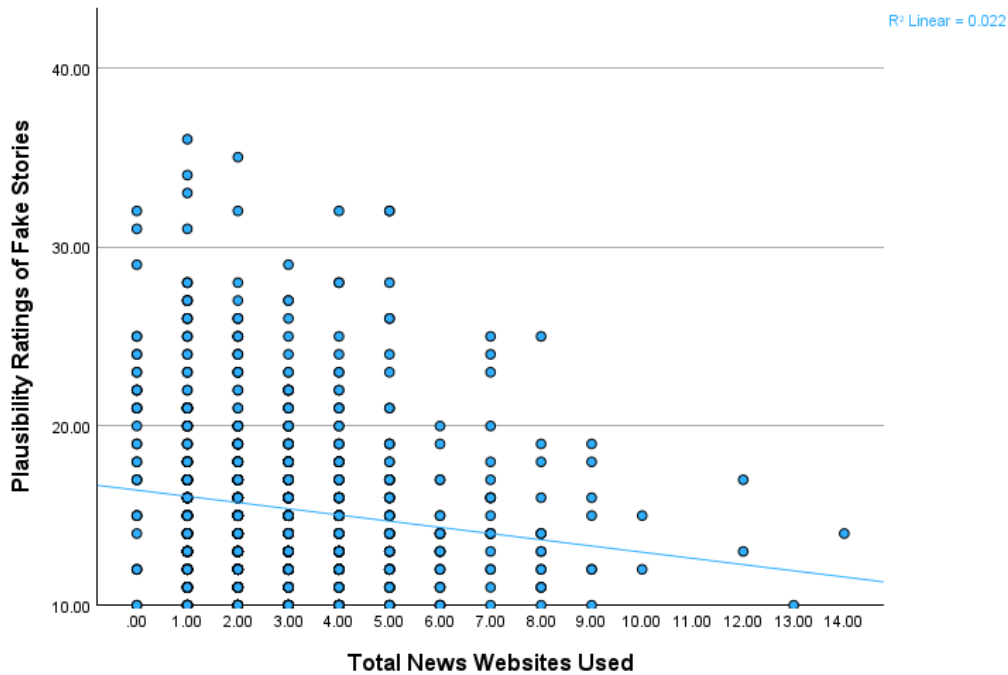
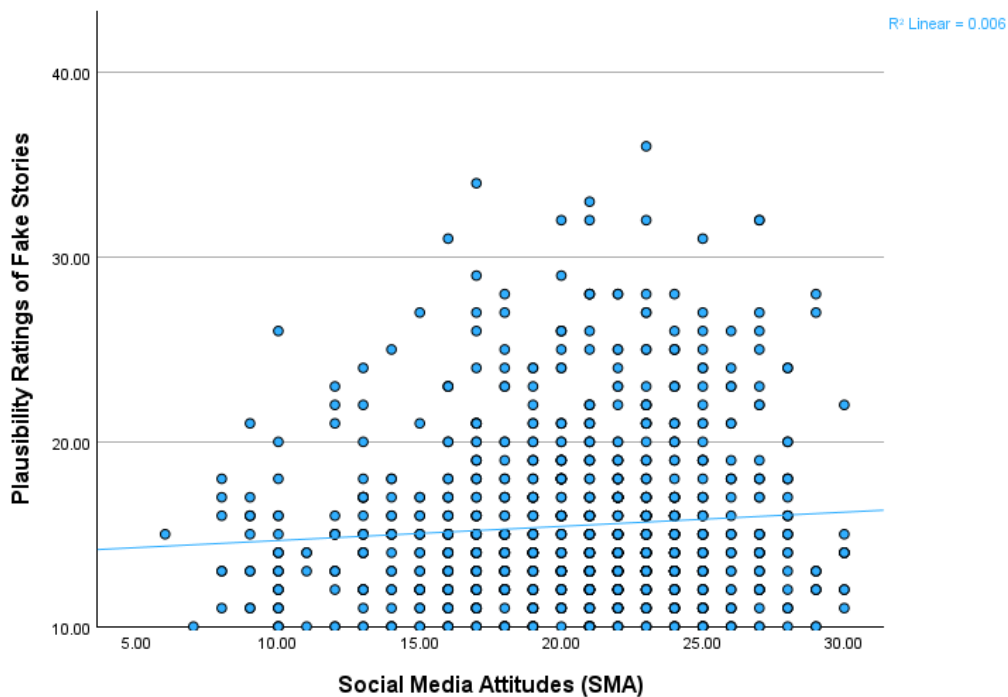


Figure 2

Scatterplot Indicating the Relationship Between the Plausibility of All Fake Stories and Social Media Attitudes (SMA)



The same basic model was then run again, but this time separately for participants in the UK and the Netherlands.

In the UK analysis (N = 423), the full model was significant, as were six predictors (number of friends/followers, number of news websites used, CMQ, age, and gender). Conversely, for the Netherlands analysis (N = 261), while the full model was significant, only two individual predictors were significant (CMQ, and, much more weakly, social media usage).

It is unclear why these differences emerged. One possibility is that the analysis on the UK sample, with more participants, had greater statistical power to find effects. This is possible, but as seen above, participants based in the Netherlands were generally doing better than participants in the UK at judging the likelihood of the stories. This may suggest that there are other differences within the UK sample that could explain the differences. Evidence for this possibility includes five strands of evidence:

1. The UK sample had a notably higher CMQ score ($M = 16.03$) than the Dutch sample ($M = 11.55$, $p < .001$, $d = 1.22$).
2. The UK sample had more positive attitudes towards social media ($M = 21.52$) than the Dutch sample ($M = 19.28$, $p < .001$, $d = 0.51$).
3. The UK sample had less familiarity with both true and false stories (both $ps < .001$, and medium effect sizes).
4. On average, the UK sample used more social media websites ($M = 2.95$) than the Dutch sample ($M = 2.60$, $p < .001$, $d = 0.23$).
5. The UK sample used fewer news websites ($M = 2.19$) than the Dutch sample ($M = 3.44$, $p < .001$, $d = -0.73$).

Conspiracy mentality, news and social media

Assessment of the full sample revealed some additional interesting correlations. **The CMQ score was positively correlated with the total number of social media websites used ($r = 0.09$, $p = .004$), showing that higher CMQ scores were associated with a greater range of social media websites used. Conversely, the CMQ score was negatively correlated with the total number of news websites used ($r = -.20$, $p < .001$), showing that higher CMQ scores were associated with fewer news websites used.**

Recommendations

1. In order to decrease the public's susceptibility to dis- and misinformation, it is useful to promote consumption of a wide range of news websites;
2. We believe that the promotion of use of new websites as opposed to social media platforms will lower the public's lower conspiracy mentality and increase its ability to discern false from true stories in the news.