# King's Research Portal

*Document Version*
Publisher's PDF, also known as Version of record

[Link to publication record in King's Research Portal](#)

# The relationship between conspiracy beliefs and compliance with public health guidance with regard to COVID-19

Daniel Allington and Nayana Dhavan

King's College London

8 April 2020

Compliance with lockdown policies and public health advice is necessary during the current emergency, but it has been reported that a minority are reluctant to cooperate. There have also been reports of conspiracist beliefs relating to COVID-19 proliferating on social media platforms such as Facebook and YouTube. We accordingly examined whether non-compliance was significantly associated with adherence to conspiracist beliefs.

In partnership with CitizenMe and in compliance with King's College London ethical procedures, we carried out a survey of adults resident in the UK. Altogether 949 individuals gave consent to take part in the research and completed the questionnaire, from 3-7 April 2020. We found a statistically significant negative relationship between belief in COVID-19 conspiracy theories and compliance with public health guidance with regard to COVID-19. This suggests that conspiracy beliefs may present a substantial public health risk. This is consistent with earlier studies which have found a relationship between conspiracy beliefs and reluctance to follow public health advice with regard both to vaccination and to safer sex (Thorburn and Bogart 2005, Zimmerman et al 2005, Goertzel 2010, Grebe and Nattrass 2012, Jolley and Douglas 2014, Dunn et al 2017).

The three conspiracy beliefs that we asked about were as follows:

1. The virus that causes COVID-19 was probably created in a laboratory
2. The symptoms of COVID-19 seem to be connected to 5G mobile network radiation
3. The COVID-19 pandemic was planned by certain pharmaceutical corporations and government agencies

The three aspects of public health guidance that we asked about were as follows:

A. Spending as little time as possible outside of your home
B. Staying at least 2 metres apart from anyone outside of your household
C. Washing your hands more often, for 20 seconds

Each of the three conspiracy beliefs was associated with a lower rate of compliance with each of the three aspects of public health guidance (see Table 1). The relationship appeared strongest with regard to Belief 2 ('The symptoms of COVID-19 seem to be connected to 5G mobile network radiation'). Respondents holding this belief appeared much less likely to comply with each of the three aspects of public health guidance, when compared to respondents who did not hold this belief. This was statistically significant in all three cases (see Table 2). Each of the other two beliefs had a statistically significant negative relationship with compliance with at least one of the aspects of public health guidance.

We also asked respondents about the extent to which they agreed with the following statement:

> The government wants us all to stay at home now, but there's no good reason for that

Each of the three conspiracy beliefs was associated with higher levels of agreement with the above statement (see Table 3 and Figure 1). In all three cases, the apparent effects were very highly statistically significant (see Table 4). The apparent effect was again strongest with regard to Belief 2 ('The symptoms of COVID-19 seem to be connected to 5G mobile network radiation'), although it was only slightly weaker with regard to Belief 3 ('The COVID-19 pandemic was planned by certain pharmaceutical corporations and government agencies'), and the difference between the two was within the 95% margin of error. Altogether 37% of respondents to our survey who expressed belief in a connection between 5G and COVID-19 also expressed agreement with the idea that there is no good reason for the current lockdown.

See table 5 for sample descriptive statistics. As this is a non-probability sample, it was not used to provide an estimate of total percentages holding each of the three conspiracy beliefs.

*Table 1: Percentage compliance with the three aspects of public health guidance, by conspiracy belief*

| Conspiracy | Belief? | N | Staying at home | Keeping 2m distance | Washing hands, 20s |
|---|---|---|---|---|---|
| Probably from laboratory | Yes | 230 | 74% | 73% | 77% |
| | No | 719 | 78% | 79% | 81% |
| Symptoms connected to 5G | Yes | 49 | 63% | 61% | 63% |
| | No | 900 | 78% | 78% | 81% |
| Pandemic was planned | Yes | 93 | 73% | 57% | 68% |
| | No | 856 | 77% | 80% | 81% |

*Table 2: Apparent effects of conspiracy belief on compliance with aspects of public health guidance (odds ratios)*

| Conspiracy belief | Statistic | Staying at home | Keeping 2m distance | Washing hands, 20s |
|---|---|---|---|---|
| Probably from laboratory | Est. OR | 0.82 | 0.70 | 0.78 |
| | Low OR | 0.58 | 0.49 | 0.54 |
| | High OR | 1.18 | 1.00 | 1.14 |
| | *p* | 0.280 | 0.046 | 0.188 |
| Symptoms connected to 5G | Est. OR | 0.49 | 0.43 | 0.42 |
| | Low OR | 0.26 | 0.23 | 0.22 |
| | High OR | 0.96 | 0.84 | 0.81 |
| | *p* | 0.023 | 0.008 | 0.006 |
| Pandemic was planned | Est. OR | 0.79 | 0.34 | 0.49 |
| | Low OR | 0.48 | 0.21 | 0.30 |
| | High OR | 1.35 | 0.54 | 0.82 |
| | *p* | 0.364 | < 0.001 | 0.004 |

95% confidence intervals and *p*-values calculated using Fisher's exact test on the assumption that the sample can be treated as equivalent to random

*Table 3: Percentage of respondents agreeing (whether 'strongly' or 'a little') that there is 'no good reason' for staying at home, by conspiracy belief*

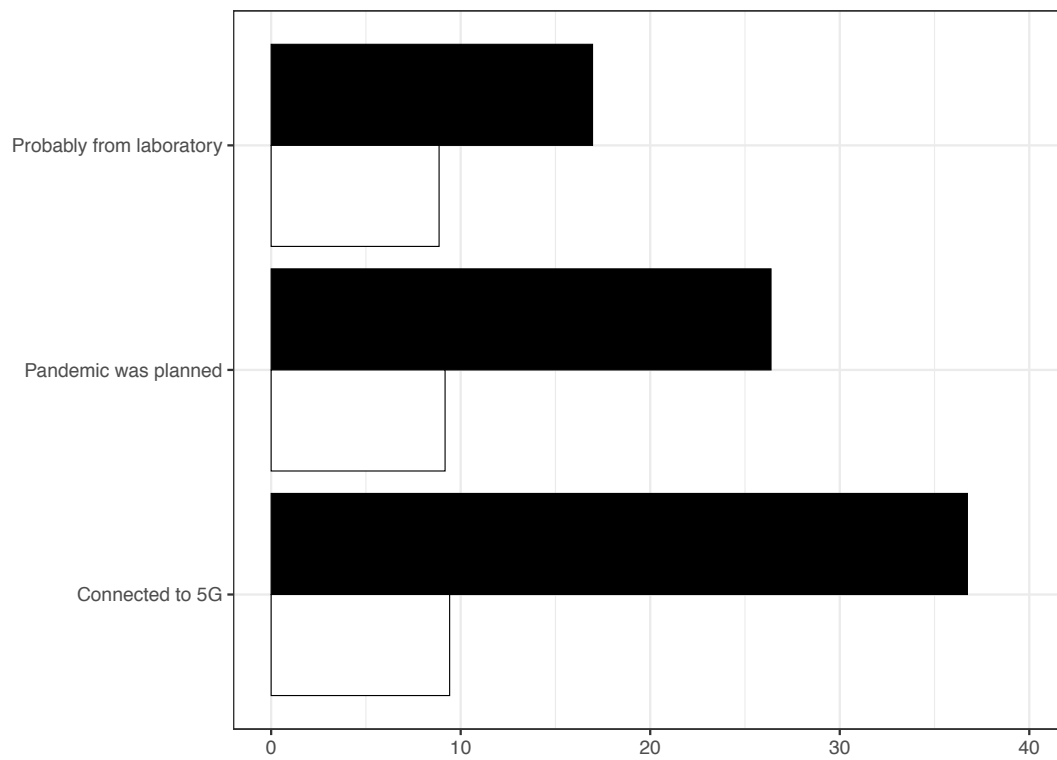| Conspiracy | Belief | Agreement |
|---|---|---|
| Created in a lab | Yes | 17% |
| | No | 9% |
| Symptoms connected to 5G | Yes | 37% |
| | No | 9% |
| Pandemic was planned | Yes | 26% |
| | No | 9% |



*Figure 1: Percentage of respondents agreeing (whether 'strongly' or 'a little') that there is 'no good reason' for staying at home, by conspiracy belief (black = considers belief true; white = does not consider belief true)*

*Table 4: Apparent effect of conspiracy belief on strength of agreement that there is 'no good reason' for staying at home*

| | Vargha & Delaney | | | Mann-Whitney | |
|---|---|---|---|---|---|
| Belief | A | Low | High | U | p |
| Probably from laboratory | 0.58 | 0.55 | 0.62 | 67093.5 | < 0.001 |
| Symptoms linked to 5G | 0.72 | 0.64 | 0.79 | 12044.0 | < 0.001 |
| Pandemic was planned | 0.67 | 0.61 | 0.73 | 24369.5 | < 0.001 |

P-values and bootstrapped 95% confidence intervals calculated on the assumption that the sample can be treated as equivalent to random

*Table 5: Sample size, age (mean and standard deviation), and gender*

| | |
|---|---|
| N | 949 |
| Age (M) | 36.35 |
| Age (SD) | 10.49 |
| Male | 32% |
| Female | 68% |

## Acknowledgements

## References

Dunn, A.G., Surian, D., Leask, J., Dey, A., Mandl, KD., and Coiera, E. 2017. Mapping information exposure on social media to explain differences in HPV vaccine coverage in the United States. *Vaccine*, 35: 3033–40.

Goertzel, T. 2010. Conspiracy theories in science. *European Molecular Biology Organization Reports*, 11: 493-499.

Grebe, E. and Nattrass, N. 2012. AIDS conspiracy beliefs and unsafe sex in Cape Town. *AIDS and Behavior*, 16: 761-773.

Jolley, D., and Douglas, K. 2014. The effects of anti-vaccine conspiracy theories on vaccination intentions. *PLoS ONE* 9: e89177.

Mangiafico, S. 2020. rcompanion: functions to support extension education program evaluation, version 2.3.21. https://CRAN.R-project.org/package=rcompanion

Thorburn, S. and Bogart, L. M. 2005. Conspiracy beliefs about birth control: barriers to pregnancy prevention among African Americans of reproductive age. *Health Education & Behavior* 32: 474-487.

Wickham, H. 2016. *ggplot2: elegant graphics for data analysis*. New York: Springer-Verlag.

Zimmerman, R.K., Wolfe, R.M., Fox, D.E., Fox, J.R., Nowalk, M.P., Troy, J.A., and Sharp, L.K. 2005. Vaccine criticism on the World Wide Web. *Journal of Medical Internet Research*, 7/2: e17.