

Witness Name:

Henry Potts

Dated: 10.10.22

Ref: M2/SAGE/01/HP

COVID-19 INQUIRY – MODULE 2

Questionnaire Response – Professor Henry Potts

1: Overview of qualifications, career history, professional expertise and major publications:

Qualifications

1.1. The following table outlines my qualifications:

Table 1- Qualifications

2009	Postgraduate Certificate in Learning Technologies, University College London
2005	Chartered Statistician, Royal Statistical Society
1999	PhD in Psychology, Institute of Psychiatry (King's College, London, University of London)
1996	MSc in Applied Statistics, University of Oxford
1991	BA (Hons.), Natural Sciences, University of Cambridge

Employment History

1.2. The following table outlines my employment history:

Table 2- Employment history

2020-present	Professor, Institute of Health Informatics, University College London
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2018-2020	Associate Professor, Institute of Health Informatics, University College London
2010-2018	Senior Lecturer in Health Informatics, Centre for Health Informatics & Multiprofessional Education, University College London
2003-2010	Lecturer in Graduate Programmes (Health Informatics and Risk Management), Centre for Health Informatics & Multiprofessional Education, University College London Medical School, UCL
2000-2004	Research psychologist (2002-2003)/medical statistician (2000-2004), Cancer Research UK London Psychosocial Group, Institute of Psychiatry/Guy's, King's & St Thomas' School of Medicine, King's College, London
1999-2002	Research fellow, Knowledge Management Centre, School of Public Policy, University College London
1997-1999	Medical statistician, ICRF Medical Statistics Group, Centre for Statistics in Medicine

- 1.3. I trained as a health psychologist, with a first degree majoring in psychology and then a PhD on health psychology. I also trained in statistics, with an MSc in applied statistics and my first academic post was as a medical statistician in Oxford. In my career, I have largely worked as a health psychologist, with a focus on statistics and research methods. I have specialised in health informatics, with much of my work on digital health.
- 1.4. I joined UCL permanently in 2004. I was made a Senior Lecturer in health informatics in 2010, and a Professor of health informatics in October 2020, during the pandemic. I am the programme director for an MSc in Health Data Analytics. I was also on a part-time secondment for a (non-pandemic-related) project at Public Health England from late 2019 until its dissolution.
- 1.5. In 2009, I joined with Prof. Susan Michie for a successful bid to the National Institute of Health Research for a grant entitled, "Public responses to swine flu communications: A longitudinal analysis." This was to analyse data from a longitudinal series of surveys of the general public conducted by the Department of Health to understand the public's attitudes and knowledge

relating to the 2009 influenza A H1N1v (swine flu) pandemic. We employed G James Rubin (now Prof. Rubin) on the project. We published a monograph on the work (Rubin *et al.*, 2010) and several related papers. This then led to some work planning for the next pandemic, including a Department of Health Policy Research Programme grant (2013-5).

- 1.6. Most importantly, however, we – James Rubin, Richard Amlôt, Nicola Fear, myself and Susan Michie – won a grant from the National Institute for Health Research entitled “Evaluating and improving communication with the public during a pandemic, using rapid turnaround telephone surveys”. We had previously shown the value of the Department of Health public surveys during swine flu, but wanted to design better surveys for the next pandemic. The grant funded work to develop a survey, carried out in 2012-3 (described in Rubin *et al.*, 2014), but also arranged for funding to pay for work analysing survey results when the next pandemic happened. This was activated in February 2020 and became what we call the CORSAIR project (COVID-19 Rapid Survey of Adherence to Interventions and Responses).

Publications

- 1.7. Full publication list available at <http://www.bondegezou.co.uk/biog.htm#pubs>
Pre-covid 19 pandemic-related
- 1.8. Rubin GJ, Finn Y, Potts HWW, Michie S (2015). Who is sceptical about emerging public health threats? Results from 39 national surveys in the United Kingdom. *Public Health*, **129**, 1553-62. doi: 10.1016/j.puhe.2015.09.004
- 1.9. Rubin GJ, Bakhshi S, Amlôt R, Fear N, Potts HWW, Michie S (2014). The design of a survey questionnaire to measure perceptions and behaviour during an influenza pandemic: The Flu TELEphone Survey Template (FluTEST). *Health Services & Delivery Research*, **2**(41). doi: 10.3310/hsdr02410
- 1.10. Rubin GJ, Potts HWW, Michie S (2010). The impact of communications about swine flu (influenza A H1N1v) on public responses to the outbreak: Results from 36 national telephone surveys in the UK. *Health Technology Assessment*, **14**(34), 183-266. doi: 10.3310/hta14340-03

Selected other (not pandemic related)

- 1.11. Cresser Cresswell K, Sheikh A, Dean Franklin B, Hinder S, Nguyen HT, Krasuska M, Lane W, Mozaffar H, Mason K, Eason S, Potts HWW, Williams R (2022). Benefits realization management in the context of a national digital transformation initiative in English provider organizations. *Journal of the American Medical Informatics Association*, **29**(3), 536-45. doi: 10.1093/jamia/ocab283
- 1.12. Potts H, Death F, Bondaronek P, Gomes M, Raftery J, Public Health England, UK Health Security Agency (2021). Evaluating digital health products. GOV.UK collection, 16 Oct 2021. <https://www.gov.uk/government/collections/evaluating-digital-health-products>
- 1.13. Bell L, Garnett C, Qian T, Perski O, Williamson E, Potts HWW (2020). Engagement with a behavior change app for alcohol reduction: Data visualization for longitudinal observational study. *Journal of Medical Internet Research*, **22**(12), e23369. doi: 10.2196/23369
- 1.14. Joffe H, Potts HWW, Rossetto T, Doğulu C, Gul E, Perez-Fuentes G (2019). The Fix-it face-to-face intervention increases multihazard household preparedness cross-culturally. *Nature Human Behaviour*, **3**, 453-61. doi: 10.1038/s41562-019-0563-0
- 1.15. Unwin E, Woolf K, Wadlow C, Potts HWW, Dacre J (2015). Sex differences in medico-legal action against doctors: A systematic review and meta-analysis. *BMC Medicine*, **13**, 172. doi: 10.1186/s12916-015-0413-5
- 1.16. Woolf K, Potts HWW, McManus IC (2011). Ethnicity and academic performance in UK trained doctors and medical students: A systematic review and meta-analysis. *BMJ*, **342**, d901. doi: 10.1136/bmj.d901
- 1.17. Greenhalgh T, Stramer K, Bratan T, Byrne E, Russell J, Potts HWW (2010). Adoption and non-adoption of a shared electronic summary record in England: A mixed-method case study. *BMJ*, **340**, c3111. doi: 10.1136/bmj.c3111
- 1.18. Williams ACdeC, Potts HWW (2010). Group membership and staff turnover affect outcomes in group CBT for persistent pain. *Pain*, **148**(3), 481-6. doi: 10.1016/j.pain.2009.12.011

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- 1.19. Lally P, van Jaarsveld CHM, Potts H, Wardle J (2010). How are habits formed: Modelling habit formation in the real world. *European Journal of Social Psychology*, **40**(6), 998-1009. doi: 10.1002/ejsp.674
- 1.20. Taylor C, Graham J, Potts HWW, Richards MA, Ramirez AJ (2005). Changes in mental health of UK hospital consultants since the mid-1990s. *The Lancet*, **366**(9487), 742-4. doi: 10.1016/S0140-6736(05)67178-4
- 1.21. Taylor P, Champness J, Given-Wilson R, Johnston K, Potts H (2005). Impact of computer-aided detection prompts on the sensitivity and specificity of screening mammography. *Health Technology Assessment*, **9**(6).

2: List of groups I participated in and the relevant time period:

- 2.1. SPI-B (from late March 2020 to 9 March 2022)
- 2.2. Ethnicity Sub-Group of the Scientific Advisory Group for Emergencies (Sep-Nov 2020)
- 2.3. Worked with the Department of Health and Social Care (Feb 2020-Apr 2022)

3: Overview of involvement in groups between January 2020 and February 2022:

When and how you came to be a participant

- 3.1. At the end of December 2019, I read the early media reports about a novel coronavirus in Wuhan. In January 2020, we were communicating via email within the CORSAIR team (called FluTEST at the time) about the possibility of our pandemic preparedness project being activated. The Department of Health and Social Care began running surveys of the public, as planned, in late January. The FluTEST/CORSAIR project was officially re-activated on 1 February 2020, although we only heard about that a few days later. We (myself, Louise Smith, James Rubin, Richard Amlôt, Nicola Fear, Susan Michie) began working on the project. We had two meetings at the invitation of 10 Downing Street with 10 Downing Street staff, us and DHSC representatives. I attended the second of these on 3 March 2020 at 10 Downing Street (with Ben Warner, James Rubin, Louise Smith and two DHSC representatives).

- 3.2. The importance of the CORSAIR project, analysing nationally representative public surveys commissioned by DHSC, was apparent. We had data that was useful for government and for SAGE. Several of my colleagues on the project were already SAGE/SPI-B participants (Rubin, Smith, Michie, Amlôt, if I recall correctly). By late March 2020, it seemed sensible for all of us in the CORSAIR team to become SPI-B participants. I was inducted into SAGE and I believe I attended my first SPI-B meeting on 30 March 2020.
- 3.3. During SPI-B work, the need for an Ethnicity Sub-Group became apparent. I volunteered to be involved in early September 2020, cognisant that CORSAIR data would be valuable to the Sub-Group and because I had some experience of work on disparities related to ethnicity through work on medical education (e.g., Woolf *et al.*, 2011).

The number of meetings you attended, and your contributions to those meetings

- 3.4. Looking through my diary, I estimate the following: I attended nearly all of the regularly scheduled SPI-B meetings (24 meetings attended) and Ethnicity Sub-Group meetings (7 meetings attended), plus some additional meetings (two meetings where SPI-B met the NHS COVID-19 App developers; one meeting with a briefing for all SAGE participants on preparing for this Inquiry).
- 3.5. Most of the SPI-B meetings were large, so I was generally only making minor contributions, unless we were discussing a specific piece of work I had been involved with. This was usually the results from the CORSAIR study, as per the list of CORSAIR reports below, so I generally helped with explaining the results we had and discussing future plans for data analyses or changes to the survey questions that would be useful.
- 3.6. The Ethnicity Sub-Group meetings were much smaller and we all contributed. I remember discussions of how we should frame questions around ethnicity (terminology, underlying theories), what we could conclude from the CORSAIR data and what value there would be in other data sources.

Your role in providing research, information and advice

- 3.7. My main role derived from my work within the CORSAIR team. Within the CORSAIR team, we all contributed ideas. I have particular expertise on

statistical and methodological questions within CORSAIR, and there were many issues around how to analyse the data we had from DHSC and around the implications of methodological choices made. I also contributed in terms of formulating research questions and planning analyses, and advising on changes to the questions asked in the surveys. We all contributed to writing up research results and suggesting recommendations flowing from the work.

- 3.8. Most of my contributions within SPI-B and the Ethnicity Sub-Group were around what the CORSAIR data could tell us. However, I also contributed where and when I could in terms of general debates within health psychology, methodological and statistical questions around other data sources, and on questions relating to digital health. On the latter point, I led on the SPI-B response to enquiries from the developers of the NHS COVID-19 App.

4: Summary of documents to which I contributed for the purposes of advising groups:

CORSAIR

- 4.1. The CORSAIR website, <http://epr.hpru.nihr.ac.uk/our-research/research-themes/response/corsair-study>, contains links to all documents produced by the project, including preprints, published papers and data reports, and will continue to be updated. Data reports were mainly written for DHSC, while some were specifically for SPI-B or other SAGE activity, as detailed below. All the reports were made available to SPI-B members through the SPI-B file sharing system. We also directly alerted particular SPI-B colleagues to particular outputs as and when seemed useful.
- 4.2. With many of the reports, we built on the initial work to turn them into academic papers, made available first as pre-prints, and then published in journals. Published papers would sometimes be expanded compared to the pre-prints using data from additional survey waves. The CORSAIR publications are as follows:

Data reports

- 4.3. [Worry, behaviour and stigma following UK Government communications during the COVID-19 outbreak: results from three UK surveys](#) (Shared with

DHSC, 24 February 2020): These early data suggested a modest engagement with UK Government advice about respiratory and hand hygiene behaviour. Official campaigns appeared to be having some impact, but there was a troubling endorsement of avoidance attitudes regarding Chinese population centres in the UK. We proposed that increasing the reach and impact of official advice, and targeting perceived efficacy of individual behaviours and self-efficacy of engaging in them may improve uptake of recommended behaviours without increasing stigma or avoidant behaviour.

- 4.4. [Worry, recommended behaviours and stigma. Wave 4 – 17th to 20th February 2020](#) (Shared with DHSC, 26 February 2020): The ‘Catch it, Bin it, Kill it’ had been seen by more of the population (58%) and was still having a positive impact on behaviour. Risk perception was still highly associated with uptake of non-recommended as well as recommended behaviours. Recommendations not to focus on worry or risk perceptions in communications still stood, because this was likely to increase uptake of non-recommended behaviours, as well as recommended behaviours. We suggested that focussing on efficacy and self-efficacy for specific behaviours may be an effective way of improving uptake. This may be particularly true for behaviours which are not already perceived as highly effective, e.g. reducing the number of people you meet (51.1% endorsed not effective), cleaning/disinfecting surfaces (21.7% endorsed not effective), and using sanitising hand gel (18.8% endorsed not effective).
- 4.5. [Vulnerable populations. Wave 6 – 2nd to 5th March 2020](#) (Shared with DHSC, 9 March 2020): While older people (aged 65+) believed that coronavirus would be more severe for them than the rest of the population, they rated their risk of catching coronavirus and the likelihood of catching coronavirus as lower than the rest of the population. Possibly, this reflected an increased intention to cocoon, although there was no indication in the data yet of greater social distancing occurring in the over 65s.
- 4.6. [Key information sources, by wave](#) (Shared with DHSC, 17 March 2020): Graphs showing the use of various key information sources.

- 4.7. [Hand hygiene behaviours – impact of handwashing campaign](#) (Shared with DHSC, 17 March 2020): Washing hands thoroughly and regularly “more often than usual” had risen dramatically in the last couple of weeks, in line with the release of the Government handwashing campaign. Perceived effectiveness and confidence that people can carry out the behaviour was high. These were associated with increasing handwashing behaviour. Worry and perceived risk of coronavirus were also strongly associated with increased handwashing.
- 4.8. [Vulnerable populations. Wave 7 – 9th to 11th March 2020](#) (Shared with DHSC, 17 March 2020): In this week’s sample, older participants (aged 65+) perceived a greater risk of coronavirus to themselves and thought coronavirus would be more severe for themselves, but they thought they were less likely to catch coronavirus than younger adults (16-64 years old) and were less worried about coronavirus. This may have reflected overall differences in social contact levels between age groups. While there was no evidence of increased social distancing (reducing the number of people they had met in the past week) in vulnerable groups, older adults and those with chronic illnesses were more likely to try to stay at home and avoid contact with others if symptomatic. We recommended that messaging to stay at home when symptomatic should target the younger, healthy population.
- 4.9. [Symptom knowledge and intentions when ill](#) (Shared with DHSC, 18 March 2020): Recognition of symptoms was limited, but exposure to information was associated with better recognition. Using “flu-like” as a descriptor was ambiguous. Most people know to avoid healthcare facilities if ill, but those who feel most at risk were most likely to break this rule. Messaging was having a positive influence on intentions to seek healthcare remotely. Higher perceived risk was associated with reduced intention to isolate if ill. Messaging was having a positive influence on intentions to self-isolate if ill.
- 4.10. [Self-reported adherence to social distancing measures](#) (Shared with DHSC, 3 April 2020): We concluded that targeted messaging for groups who are not adhering to social distancing measures, in particular males, those aged 16-24 years, and those living in more deprived areas, may help with compliance with social distancing measures, in particular for behaviours which are not

currently allowed in accordance with Government guidelines. Further support from organisations and employers, rather than addressing individual-level factors, may encourage people to stop going to work if not necessary. Messaging should not focus on worry and perceived risk/severity of the coronavirus as evidence for associations with adherence to different social distancing measures was mixed. People who are more worried about the coronavirus impacting their mental health are less likely to adhere to social distancing measures. Messages promoting wellbeing during the outbreak should be considered.

- 4.11. [Self-reported adherence to self-isolation](#) (Shared with DHSC, 7 April 2020): While Government campaigns were reaching most people (91%+), Government measures were not completely understood. Approximately 25% of the sample thought that Government measures allowed outings from the home (for groceries/pharmacy, for exercise, and to go to work if necessary) even if they are symptomatic. Self-reported adherence to self-isolation if symptomatic in the past seven days was poor: 30% reported staying at home for seven days when symptomatic; with 57% staying at home for 14 days when someone in their household was symptomatic. Of those who reported experiencing symptoms in the last seven days, a sizeable percentage reported having left the home to help or provide care for a vulnerable person (16%) and to go out to work (13%).
- 4.12. [Handwashing behaviours](#) (Shared with DHSC, 9 April 2020): Campaigns encouraging hand hygiene behaviours should emphasise the risk of coronavirus to people in the UK and oneself. Other risk factors, such as severity of coronavirus and likelihood of catching coronavirus, should also be included. Messages should emphasise that people can spread coronavirus even if they are asymptomatic. Messages should continue to state that hand washing is a simple and effective way of preventing the spread of coronavirus that can be easily carried out and incorporated into daily life. Communications encouraging people to wash their hands before eating or preparing food and after blowing their nose, sneezing or coughing should target those aged 16 to 24 years.
- 4.13. [Symptom identification and associated factors](#) (Shared with DHSC, 9 April 2020): Messages should attempt to reach groups which are less likely to identify

the key symptoms of coronavirus, such as men and those aged 16 to 24 years. Messages should target groups who did not identify key symptoms of coronavirus, for example, those with coronavirus-relevant chronic conditions. Messages should highlight key symptoms of coronavirus clearly to minimise the risk of people incorrectly categorising themselves as having or not having had coronavirus, which may lead to non-adherence to protective measures. Messages should focus on the fact that people can spread COVID-19 even when they are asymptomatic.

- 4.14. [Changes in behaviour if you think you have ever had coronavirus or have had it confirmed by a test](#) (Shared with DHSC, 14 April 2020): People who think they have had coronavirus were less likely to correctly identify the key symptoms of coronavirus. This group were also less likely to adhere to certain social distancing measures (meeting friends/family and going out to the shops for non-essential items) and were less likely to intend to adhere to self-isolation measures if someone in their household develops symptoms.
- 4.15. [Keeping well physically and psychological wellbeing during the Government “lockdown”, and impact on adherence to social distancing measures](#) (Shared with DHSC, 20 April 2020): Groups who report they are not keeping well physically (people with chronic illnesses themselves, who have a household member with a chronic illness, and those who live in more deprived areas) could be targets for programmes to increase physical fitness. This could be from the Government or external organisations (e.g., walking groups or gyms). Programmes may need to be tailored to fit the needs of these populations. Keeping connected during the “lockdown” is likely to be beneficial for psychological wellbeing. Messages should promote keeping connected with friends or family who do not live with you through virtual platforms. Upgrading system level factors, increasing availability of better Internet connection which can cope with greater demand (e.g., from increased videocalls), should be considered. This should first target those who are most at risk of worse psychological wellbeing and who are less likely to be able to afford upgrades. Managing concerns about the impacts of coronavirus on practical aspects of lifestyle may positively affect adherence to social distancing measures. Continuing to emphasise the importance of social distancing measures to

reduce the impact of coronavirus on the NHS may promote adherence to social distancing measures. Including standardised measures of wellbeing, quality of life and physical health in future surveys will allow for comparison with normative data.

- 4.16. [Psychological wellbeing and self-reported general health](#) (Shared with DHSC, 7 May 2020): Promoting connectedness will likely help improve mental wellbeing. Messaging could promote different ways to do this (e.g. by telephone, videocall) and target those who may be unfamiliar with this technology (e.g. older adults). Decreasing financial concerns and markers of self-reported poverty will likely improve mental wellbeing and self-reported general health. This could target groups who may be particularly at risk of this. Those with a chronic mental health condition may need increased support. This would likely decrease mental distress.
- 4.17. [Self-reported adherence to self-isolation and social distancing measures](#) (Shared with DHSC, 11 May 2020): Reported adherence to self-isolation measures was low. Identification of the most common symptoms of coronavirus was low. While self-reported adherence to social distancing measures out of the home was high, factors associated with increased shopping behaviour included: decreased worry about coronavirus generally, decreased worry about the functioning of the NHS, decreased perceived risk of coronavirus to oneself and friends and relatives, and better self-reported general health.
- 4.18. [Personal protective behaviours in NHS workers](#) (Shared with NHS England, 14 May 2020): Messages to NHS workers should increase awareness about the symptoms of coronavirus and enforcing the requirement to stay at home if ill; emphasise that handwashing is highly effective, straightforward to do, and must be performed not only at work but also in day-to-day life; discuss the importance of adhering to standard social distancing practices outside of work settings. These messages should be clear that wearing masks, face coverings or gloves is not sufficient to reduce risk to themselves or others.

- 4.19. [Symptom prevalence](#) (Shared with SPI-B, 22 May 2020): Prevalence of high temperature/fever or a new, continuous cough ranged from 10.4% (data collected 16-18 March) to 5.6% (data collected 27-29 April).
- 4.20. [Ethnicity, COVID-19-related behaviours, attitudes and outcomes](#) (Shared with DHSC, 4 June 2020): Public health information about COVID-19 symptoms could be better targeted at ethnic minority groups. Language difficulties may be a factor here. There were very high levels of mental health problems in some groups: additional help should be directed at these. The variation by ethnicity is largely related to systemic differences in society, but these cannot be immediately solved, so targeting support at ethnic minority groups would be a sensible strategy. Support should also be targeted around those in financial difficulty and those with pre-existing conditions.
- 4.21. [Public perceptions of a COVID-19 tracking app](#) (Shared with DHSC, 8 June 2020): Early version of [4.24].
- 4.22. [Factors associated with uptake of the Test, Trace and Isolate \(TTI\) system](#) (Shared with DHSC, 12 June 2020): Only 65% of people identified cough and high temperature/fever as symptoms of coronavirus. Only 10% of people who reported having symptoms of coronavirus in the last seven days requested an antigen test. Decreased likelihood of requesting a test was associated with markers of poverty. 75% of people would “probably” or “definitely” share details of their close contacts. We do not know if these intentions will translate into actual behaviour. Intention to share details of contacts was associated with increased perceived effectiveness of the contact tracing service. Decreased intention to share details was associated with concerns that the service was not accurate and reliable, not knowing if data would be secure and confidential, and not knowing what would happen to the data. Only 18% of people reported intending to self-isolate for fourteen days (or longer) if contacted by a contact tracing service. In the most recent survey wave, only 20% reported self-isolating after they developed symptoms of coronavirus. This proportion had dropped over time. This is also likely to be optimistic, given social desirability bias, recall bias, and confusion over what self-isolation is.

- 4.23. [Physical distancing and related behaviours: changes over time](#) (Shared with DHSC, 16 June 2020): The total number of outings was increasing. The number of outings for different reasons (e.g., to shop for groceries/pharmacy, to shop for items other than groceries/pharmacy, to go out to work, and to help or provide care for a vulnerable person) were stable over time. The number of outings to meet friends and family, and to spend time outdoors for recreational purposes, is increasing steadily. The proportion of people who reported having come into close contact with others when out was relatively stable over time. Reporting wearing a face covering or protective gloves while out and about was associated with fewer total outings in the last week. Reporting wearing a face covering or protective gloves while out and about was associated with coming into close contact with others while out and about more often.
- 4.24. [Public perceptions of a COVID-19 tracking app](#) (Shared with DHSC, 13 July 2020): Increasing perceived effectiveness of a smartphone tracking app to prevent the spread of coronavirus was likely to increase app use. Increasing one's belief that if you wanted to, you could use a smartphone tracking app to prevent the spread of coronavirus was also likely to increase app use. Increasing perceived credibility of the Government may increase use of a smartphone tracking app.
- 4.25. [Factors associated with requesting an antigen test and self-isolating after developing symptoms of coronavirus](#) (Shared with DHSC, 14 July 2020): Increasing knowledge about the key symptoms of coronavirus (cough, high temperature/fever, and loss of sense of smell or taste) is likely to decrease the percentage of people leaving home after developing symptoms of coronavirus, and increase intention to request an antigen test. Increasing knowledge about who is eligible to request an antigen test, and how to request an antigen test are likely to increase intention to request an antigen test, influencing later behaviour (requesting an antigen test if you develop symptoms of coronavirus). Communications which demonstrate how easy it is to request and return a home-testing kit are likely to increase intention to request an antigen test, in turn influencing behaviour (requesting an antigen test if you develop symptoms of coronavirus).

- 4.26. [Adherence to the test, trace and isolate system \(CORSAIR study\). \(Shared with SAGE, 3 September 2020\).](#): Self-reported adherence to test, trace and isolate behaviours was low; intention to carry out these behaviours was much higher. Identification of COVID-19 symptoms was also low. Practical support and financial reimbursement are likely to improve adherence to test, trace and isolate behaviours.
- 4.27. [Annex to Evidence summary of impacts to date of public health communications to minority ethnic groups and related challenges. \(Annex to Report by Ethnicity Subgroup of SAGE, 23 September 2020\).](#): Graphs showing how worry and symptom knowledge vary by ethnicity.
- 4.28. [Socialising indoors and outdoors](#) (Report to inform [Nervtag paper](#), 20 October 2020): The percentage of people socialising indoors was increasing.
- 4.29. [Use of the NHS COVID-19 App](#) (Shared with DHSC, 2 November 2020): Predictors of having the app (in those with smartphones) are not being a sole carer for dependent children; and worrying about coronavirus.
- 4.30. [Clusters of behaviours and adherence](#) (Shared with DHSC, 5 November 2020): Educating people about the symptoms of COVID-19 and how the virus can spread may increase intention to self-isolate request a test if symptomatic. Messaging emphasising the effectiveness and ease of testing may also increase intention to request a test if symptomatic. Women, people with a higher level of education and those reporting less financial hardship were more likely to belong to a group intending to request a test and self-isolate if symptomatic. Targeted messaging to men may be necessary. Greater support for those experiencing financial hardship may increase intention to self-isolate and request a test if symptomatic.
- 4.31. [Ventilation](#) (Shared with SPI-B and EMG, 25 November 2020): 74% agree that opening windows to improve ventilation is an effective way to prevent the spread of COVID-19. Despite high perceived self-efficacy for opening windows to improve ventilation, as the weather gets colder, people may be more reluctant to do so.
- 4.32. [Clusters of self-reported behaviours and adherence in those who had COVID-19 symptoms](#) (Shared with DHSC, 4 December 2020): When

controlling for socio-demographic characteristics, the only factor strongly associated with belonging to the group that self-isolated after developing symptoms was lower credibility of the government. This was likely confounded by a range of other attitudes towards government and the pandemic.

- 4.33. [Workplace attendance in people able to work and factors predicting it: evidence from cross-sectional surveys. Report to SAGE 4 February 2021:](#) Non-essential workplace attendance in the UK in early 2021 was significantly independently associated with a range of sociodemographic variables and personal circumstances. Having been vaccinated, financial hardship, socio-economic grade C2DE, having a dependent child at home and working in certain key sectors were associated with higher likelihood of workplace attendance.
- 4.34. [Factors associated with vaccine hesitancy](#) (Shared with SPI-B, 10 March 2021): Vaccine hesitancy is associated with low worry, low perceived risk to others, and low trust in the Government.
- 4.35. [Impact of vaccination on adherence to rules and guidance about personal protective behaviours \(PPBs\) and social distancing](#) (Shared with DHSC, 13 April 2021): Comparisons of behaviour between those who have been vaccinated versus those who have not are highly confounded. We find no evidence of different rates of reported going out (except for going out for medical need, which probably represents merely that individuals had to go out to be vaccinated). Those who had been vaccinated were more likely to report coming into close contact with others when outside the house. Those who had been vaccinated were more likely to report ventilating internal spaces and to report wearing a mask when going for a walk or exercise or when at work. This is contrary to concerns that those who had been vaccinated would be less adherent to desired behaviours and may indicate unaccounted for confounding.
- 4.36. [Impact of attitudes and beliefs about COVID-19 on adherence to rules and guidance about personal protective behaviours \(PPBs\) and social distancing](#) (Shared with DHSC, 7 May 2021): Attitudes and beliefs towards the virus played an important role in determining the degree of adherence to social distancing rules and use of personal protective behaviours.

- 4.37. [Who is engaging with COVID-19 testing?](#) (Shared with DHSC, 14 June 2021): Uptake of testing is low, with approximately 24% of respondents reporting having had a test in the last week. When you exclude people who report that their last test was a PCR test, this dropped to 17%.
- 4.38. [Recognition of symptoms of COVID-19](#) (Shared with PHE, 14 June 2021): Results on symptom recognition.
- 4.39. [Graphs of validated measures \[PHQ4, SWEMWS, AUDIT-C\]](#) (Shared with DHSC, 23 June 2021): How various measures of mental health and wellbeing vary over time.
- 4.40. [Impact of vaccination on adherence to rules and guidance about personal protective behaviours \(PPBs\) and social distancing](#) (Shared with DHSC, 25 June 2021): Broadly, vaccination status was not associated with riskier behaviour. However, among a younger cohort, respondents who had received the vaccine spent more days on a UK trip; were more likely to be in close contact with others when at work; and were less likely to request a test to confirm if one has coronavirus or not.
- 4.41. [Do members of the public think they should use lateral flow tests or PCR tests when they have COVID-19-like symptoms? The COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study.](#) (Shared with DHSC, 28 June 2021): Uptake of testing was low, with approximately 24% of respondents reporting having had a test in the last week. When you exclude people who report that their last test was a PCR test, this dropped to 17%. The most common places people got hold of their latest COVID-19 test were from their place of work, a school or further education college, or by ordering it online. After receiving a positive test, 31% of people reported leaving home “as usual”. There was some confusion about whether there was a need to complete a lateral flow test or PCR test after developing COVID-19 symptoms, with 10% of respondents stating that a lateral flow test is sufficient and 13% not stating that testing is needed.
- 4.42. [Changes in behaviour following 19 July 2021](#) (Shared with DHSC, 6 August 2021): On 19 July 2021, all remaining legal limits on social contacts were

removed. This report investigated whether behaviours changed after the removal of restrictions.

- 4.43. [Risky social mixing](#) (Shared with DHSC, 9 August 2021): Social mixing broadly decreased when restrictions were in place. Engaging in the highest risk social mixing varied strongly over time. Engaging in highest risk social mixing was associated with: being younger; lower worry about COVID-19, lower perceived risk of COVID-19 (to oneself and people in the UK); lower perceived severity of COVID-19; thinking the risks of COVID-19 were being exaggerated; not agreeing that one's personal behaviour had an impact on how COVID-19 spreads; and not agreeing that information from the Government about COVID-19 can be trusted.
- 4.44. [Risky social mixing – age in bands](#) (Shared with DHSC, 18 August 2021): A supplement to [4.43] looking at how risky social mixing varied with age.
- 4.45. [Testing when symptomatic, and staying at home with influenza-like illness, during autumn and winter 2021 \(Report to SAGE, 30 September 2021\)](#): Communication about what symptoms necessitate a test should be explicit about the exact nature of these symptoms and the need to test immediately. This will become ever more relevant as seasonal respiratory viruses begin to circulate. The benefits of using PCR for symptomatic testing, and the limitations of using a lateral flow test in this situation, should be made clear to the public. Modelling to understand the trade-offs between a greater uptake of lateral flow tests among people with symptoms and a reduced sensitivity compared to PCR would be useful. Clear messages about the need to stay at home if you have influenza-like illness are needed. To be maximally effective, messages need to come from the Government, employers, universities and schools, and be accompanied by support for employees and businesses.
- 4.46. [Agency and risk - impact on adopting protective behaviours](#) (Shared with DHSC, 5 November 2021): Greater perceived worry about COVID-19 was associated with uptake of protective behaviours (less likely to engage in risky social mixing, more likely to wear a face covering and cleanse hands) as was greater perceived risk of COVID-19 to people in the UK (more likely to wear a

face covering and cleanse hands). Locus of control was not associated with the adoption of protective behaviours, except for wearing a face covering.

- 4.47. [At risk groups](#) (Shared with SPI-B Chairs, 21 December 2021): People with certain medical conditions are at higher risk from COVID-19, as are older people. People at risk of COVID-19 were less likely to report having been shopping in the last week than those not at risk. There were no differences in other out-of-home activities. There were no differences in patterns of social mixing over time in people at risk of COVID-19. Older people (aged 65 years and over) were less likely to report having been shopping for groceries/pharmacy, shopping for other items, visiting hospitality venues, and using public transport or a taxi/minicab than younger participants. There was no difference in the reported number of times meeting up with people from another household. Older participants' shopping behaviour (for groceries/pharmacy) decreased from 29 November to 16 December 2021, spanning the emergence of the Omicron variant. There were no other changes in out-of-home activity. There were no differences in patterns of social mixing over time in older people.

Final report

- 4.48. [The COVID-19 Rapid Survey of Adherence to Interventions and Responses \(CORSAIR\) study: Final report](#). (Shared with DHSC, 22 June 2022): We summarised the outputs of the research project and noted successes and challenges we had experienced along the way. The challenges included: (1) Work in the early stages of the pandemic could have been more efficient if we were clearer as to the role of the academic team. Our USP was providing detailed examination of specific topics, rather than providing rolling reports about the data. (2) The academic and policy teams took different stances on the best timing for publications. While a compromise was found, we should have been clearer about this earlier. Future iterations of the project should include agreement on day one of what can be published when. This will need to balance the right of policy teams to consider their data before releasing it with the need to place academic findings into the public domain so that they can be reviewed and provide benefit to others.

Pre-Prints

- 4.49. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Worry and behaviour at the start of the COVID-19 outbreak: results from three UK surveys \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/h28gq: Pre-print for [4.71].
- 4.50. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Holding a stigmatising attitude at the start of the COVID-19 outbreak \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/uqvxs: Pre-print for [4.70].
- 4.51. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Engagement with protective behaviours in the UK during the COVID-19 pandemic: A series of cross-sectional surveys \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/g6qbx: Engagement with protective behaviours increased at the start of the pandemic and has remained high since. The greatest variations in behaviour reflected changes to Government rules. Despite the duration of restrictions, people have continued to adopt personal protective behaviours that were intended to prevent the spread of COVID-19.
- 4.52. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Adherence to the test, trace and isolate system: results from a time series of 21 nationally representative surveys in the UK \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). medRxiv (2020). DOI [pre-print]: 10.1101/2020.09.15.20191957: Pre-print for what was published, with additional data, as [4.64].
- 4.53. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Psychological wellbeing in the English population during the COVID-19 pandemic: a series of cross-sectional surveys](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/yj5nb: Rates of distress in the English population have been consistently high throughout the pandemic. Patterns of distress have broadly mirrored the pattern of restrictions and case numbers, but there are notable

- exceptions which indicate that other factors may play a part in population mental health.
- 4.54. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Intention to adhere to test, trace, and isolate during the COVID-19 pandemic \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/s85cm: Pre-print for [4.67].
 - 4.55. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [How have patterns of social mixing changed during the pandemic? A series of cross-sectional nationally representative surveys](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/duxvf: Pre-print for [4.73].
 - 4.56. Michie S, Potts HWW, West R, Amlôt R, Smith LE, Fear NT, Rubin GJ. [Factors associated with nonessential workplace attendance during the Covid-19 pandemic in the UK in early 2021: evidence from cross-sectional surveys](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/tzhm6: Pre-print for [4.69].
 - 4.57. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Tiered restrictions for COVID-19 in England: knowledge, motivation to adhere and self-reported behaviour \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\)](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/ukvw2: Pre-print for [4.66].
 - 4.58. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Who is engaging with lateral flow testing for COVID-19 in the UK? The COVID-19 Rapid Survey of Adherence to Interventions and Responses \(CORSAIR\) study](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/atn5u: Pre-print for [4.72].
 - 4.59. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S & Rubin GJ. [Do members of the public think they should use lateral flow tests or PCR tests when they have COVID-19-like symptoms? The COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/jz8kp: Pre-print for [4.65].
 - 4.60. Smith LE, West R, Potts HWW, Amlôt R, Fear NT, Rubin GJ, Michie S. [Knowledge of self-isolation rules in the UK for those who have symptoms of Covid-19: a repeated cross-sectional survey study](#). OSF

(2021). DOI [pre-print]: 10.31219/osf.io/dx26j: Fewer than 60% of adults in the UK between November 2020 and June 2021 appeared to know all the main rules regarding self-isolation if symptomatic with COVID-19. Knowledge was lower in younger than older people, men than women, those living in England compared with Scotland, Wales or Northern Ireland, and those living in more deprived areas.

- 4.61. Davies R, Martin AF, Smith LE, Mowbray F, Woodland L, Amlôt R, Rubin GJ. [The impact of “freedom day” on COVID-19 health protective behaviour in England: An observational study of hand hygiene, face covering use and physical distancing in public spaces pre and post the relaxing of restrictions](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/twgbf: Related to the CORSAIR project, but I was not involved with this paper.
- 4.62. Rubin GJ, Amlôt R, Fear NT, Potts HWW, Michie S, Smith LE. [Do people with symptoms of an infectious illness follow advice to stay at home? Evidence from a series of cross-sectional surveys in the UK](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/u52fx: Pre-print of what was published as [4.74].
- 4.63. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [How has the emergence of the Omicron SARS-CoV-2 variant of concern influenced worry, perceived risk, and behaviour in the UK? A series of cross-sectional surveys](#). OSF (2021). DOI [pre-print]: 10.31219/osf.io/rpcu2: Pre-print of what was published as [4.75].

Peer reviewed papers

- 4.64. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Adherence to the test, trace, and isolate system in the UK: results from 37 nationally representative surveys](#). *BMJ* 2021;372:n608. DOI: 10.1136/bmj.n608: Levels of adherence to test, trace, and isolate were low, although some improvement occurred over time. Practical support and financial reimbursement are likely to improve adherence. Targeting messaging and policies to men, younger age groups, and key workers might also be necessary.
- 4.65. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Do members of the public think they should use lateral flow tests \(LFT\) or polymerase](#)

- [chain reaction \(PCR\) tests when they have COVID-19-like symptoms? The COVID-19 Rapid Survey of Adherence to Interventions and Responses study](#). *Public Health* 2021. DOI: 10.1016/j.puhe.2021.07.023: Despite Government guidance stating that anyone with key COVID-19 symptoms should complete a PCR test, a significant percentage of the population used LFT tests when symptomatic. Communications should emphasise the superiority of, and need for, PCR tests in people with symptoms.
- 4.66. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Tiered restrictions for COVID-19 in England: knowledge, motivation, and self-reported behaviour](#). *Public Health* 2021. DOI: 10.1016/j.puhe.2021.12.016: Although recognition of local tier level was high, knowledge of specific guidance for tiers was variable. There was some indication that nuanced guidance (e.g., behaviour allowed in some settings but not others) was more poorly understood than guidance which was absolute (behaviour is either allowed or not allowed).
- 4.67. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Intention to adhere to test, trace, and isolate during the COVID-19 pandemic \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses study\)](#). *British Journal of Health Psychology* 2021. DOI: 10.1111/bjhp.125761: Psychological factors were associated with intention to adhere to key components of the contact tracing system; there was no evidence for an association with increased out-of-home activity. Messages that increase knowledge that COVID-19 can be transmitted even if someone does not have symptoms and that an individual's actions can contribute to the spread of the virus may promote engagement with the test, trace, and isolate system.
- 4.68. Smith LE, Potts HW, Amlôt R, Fear NT, Michie S, Rubin GJ. [COVID-19 and Ventilation in the Home; Investigating Peoples' Perceptions and Self-Reported Behaviour \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] Study\)](#). *Environmental Health Insights* 2021;15: 1–2. DOI: 10.1177/11786302211015588: We investigated self-reported rates of opening windows to improve ventilation in the home, perceived effectiveness of opening windows, and confidence that if you wanted to, you could open windows. One in 6 people reported rarely, if ever, opening windows in their home in the last week. Three in 4 people knew that opening

windows to improve ventilation was an effective way to prevent the spread of COVID-19 and 5 in 6 were confident that they could open windows in their home. Official messaging should continue to seek to improve knowledge about the effectiveness of ventilation for reducing COVID-19 transmission, and increase the frequency of window opening.

- 4.69. Michie S, Potts HWW, West R, Amlôt R, Smith LE, Fear NT, Rubin GJ. [Factors associated with nonessential workplace attendance during the Covid-19 pandemic in the UK in early 2021: evidence from cross sectional surveys.](#) *British Journal of Health Psychology* 2021; 198: 106-113. DOI: 10.1016/j.puhe.2021.07.002: Non-essential workplace attendance in the UK in early 2021 during the COVID-19 pandemic was significantly independently associated with a range of sociodemographic variables and personal circumstances. Having been vaccinated, financial hardship, socio-economic grade C2DE, having a dependent child at home and working in certain key sectors were associated with higher likelihood of workplace attendance.
- 4.70. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Holding a stigmatizing attitude at the start of the COVID-19 outbreak: A cross-sectional survey.](#) *British Journal of Health Psychology* (2021). DOI: 10.1111/bjhp.12564: Development of [1] focusing on stigma.
- 4.71. [Worry and behaviour at the start of the COVID-19 outbreak. Results from three UK surveys \(the COVID-19 Rapid Survey of Adherence to Interventions and Responses \[CORSAIR\] study\).](#) *Preventive Medicine Reports* 2021. DOI: 10.1016/j.pmedr.2021.101686.: Development of [1] focusing on worry.
- 4.72. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Who is engaging with lateral flow testing for COVID-19 in the UK? The COVID-19 Rapid Survey of Adherence to Interventions and Responses \(CORSAIR\) study.](#) *BMJ Open* 2022;12:e058060. doi: 10.1136/bmjopen-2021-058060.: Uptake of lateral flow testing was low. Encouraging testing through workplaces and places of study is likely to increase uptake, although care should be taken not to pressurise employees and students. Increasing knowledge that everyone

is eligible for regular asymptomatic testing and addressing common misconceptions may drive uptake.

- 4.73. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [How have patterns of social mixing changed during the pandemic? A series of cross-sectional nationally representative surveys](#). *Science Reports* 2022; 12: 10436. Doi: 10.1038/s41598-022-14431-3
- 4.74. Rubin GJ, Smith LE, Amlôt R, Fear NT, Potts HWW, Michie S. [Do people with symptoms of an infectious illness follow advice to stay at home? Evidence from a series of cross-sectional surveys in the UK](#). *BMJ Open* 2022; 12: e060511. Doi:10.1136/bmjopen-2021-060511: Many people in the UK with symptoms of an infectious disease were not following government advice to stay at home if they believed they had an infectious illness. Reducing these rates may require a shift in our national attitude to the acceptability of people attending work with infectious illnesses.
- 4.75. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [How has the emergence of the Omicron SARS-CoV-2 variant of concern influenced worry, perceived risk, and behaviour in the UK? A series of cross-sectional surveys](#). *BMJ Open* 2022; 12: e061203. Doi: 10.1136/bmjopen-2022-061203: The emergence of a novel variant of concern only slightly influenced worry and perceived risk. The main protective behaviour (wearing a face covering) promoted by new guidance showed significant re-uptake, but other protective behaviours showed little or no change.
- 4.76. Smith LE, Potts HWW, Amlôt R, Fear NT, Michie S, Rubin GJ. [Psychological wellbeing in the English population during the COVID-19 pandemic: a series of cross-sectional surveys](#). *J Psychiatr Res* 2022; 153: 254-259. Doi: 10.1016/j.psychires.2022.06.040.: Rates of distress in the English population were consistently high throughout the pandemic. Patterns of distress have broadly mirrored the pattern of restrictions and case numbers, but there are notable exceptions which indicate that other factors may play a part in population mental health.

Commentary

- 4.77. Potts HWW, Amlôt R, Fear NT, Michie S, Smith LE, Rubin GJ. [Rapid research in a pandemic: foresight, preparedness and collaboration](#). BMJ Opinion 1 April 2021: In our pandemic preparedness project, we had not envisaged the scale of COVID-19, the global lockdowns nor how long they would continue. What had been planned as a research study that could inform government became a service evaluation as we hurriedly turned out reports to answer specific government questions and assess the impact of official messages and policies. Navigating the competing pressures from the academic and policy worlds was not always easy. Conducting this work was challenging: working at speed, discussing issues closely with policy teams, revising questions as the situation changed and having to put these demands above peer-reviewed scientific publications. There will have to be planning for the next pandemic. Foresight on the part of research funders, and commitment from academic and Government teams to rapidly establish ways of working closely together are also needed.

Ethnicity sub-group

I contributed to:

- 4.78. Ethnicity Sub-Group of the Scientific Advisory Group for Emergencies [Kamal A, Pearce J, Uddin N, Potts H] (2020). Evidence summary of impacts to date of public health communications to minority ethnic groups and related challenges , 23 September 2020. Scientific Advisory Group for Emergencies, 23 October 2020. <https://www.gov.uk/government/publications/evidence-summary-of-impacts-to-date-of-public-health-communications-to-minority-ethnic-groups-and-related-challenges-23-september-2020>: COVID-19 prevention and control measures require effective public health communication to inform and update members of the public how to minimise transmission. Health messages should be tailored to reflect cultural drivers of behaviour that will increase knowledge using accessible language and including content that reflects the social norms and identity of the target community. Tailored public health messages during the COVID-19 pandemic have increased reach and accessibility of health messages, increasing knowledge and awareness of symptoms, health risk and control measures, and message acceptance, motivation and intention to comply with guidelines. Optimising public health communications is achieved

by community engagement, which is a key mechanism through which each of these positive impacts has been achieved. Negative impacts and challenges of tailored health messages included multiple guidelines causing confusion, stigmatisation and increased racialised explanations, which could lead to lower health protective behaviour, and structural barriers which limit the impact of tailored health messages. Co-production of health messages, sharing positive stories and examples of good practice, and promoting collective aims (across different channels of communication) is required to minimise negative impacts.

5: Summary of articles, interviews and/or evidence:

Research papers

- 5.1. The CORSAIR website (see previous answer) lists all papers *etc.* from the project.
- 5.2. In addition to the CORSAIR papers, I have also contributed to the following academic publications related to the pandemic:
- 5.3. Hall CE, Milward J, Spoiala C, Bhogal JK, Weston D, Potts HWW, Caulfield T, Toolan M, Kanga K, El-Sheikha S, Fong K, Greenberg N (2022). The mental health of staff working on Intensive Care Units over the COVID-19 winter surge of 2020 in England: A cross sectional survey. *British Journal of Anaesthesia*, 128(6), 971-9. doi: 10.1016/j.bja.2022.03.016 <https://www.sciencedirect.com/science/article/pii/S007091222001404>: The winter of 2020/2021 was associated with an increase in poor mental health outcomes and functional impairment amongst ICU staff during a period of peak caseload. These effects were likely to impact on patient care outcomes and longer-term resilience of the healthcare workforce. These findings provide a case for the establishment of a coherent and comprehensive recovery strategy, which appropriately matches demand for healthcare with NHS capacity and human resource, with the goal of protecting staff so that they in turn can continue to deliver safe, high-quality patient care.
- 5.4. Prieto-Merino D, Beibano da Providencia e Costa R, Gallestey JB, Sofat R, Chung S-C, Potts H (2021). Why we are losing the war against COVID-19 on the data front and how to reverse the situation. *JMIRx Med*, 2(2), e20617. doi: 10.2196/20617 <https://xmed.jmir.org/2021/2/e20617>: This is a discussion paper

focusing on health system responses internationally. It argues that we have more clinical data on COVID-19 than on any other epidemic in history, but we failed to analyse this information quickly enough. We exposed this situation and suggested concrete ideas that health systems could implement to dynamically analyse their routine clinical data, becoming learning health systems.

- 5.5. McCarthy H, Potts HWW, Fisher A (2021). Physical activity behavior before, during, and after COVID-19 restrictions: Longitudinal smartphone-tracking study of adults in the United Kingdom. *Journal of Medical Internet Research*, 23(2), e23701. doi: 10.2196/23701 <https://www.jmir.org/2021/2/e23701/>: Data from an app suggested a significant drop in physical activity (PA) during the UK's COVID-19 lockdown. Significant differences by age group and prior PA levels suggested that the government's response to COVID-19 needed to be sensitive to these individual differences. Specifically, it should consider the impact on younger age groups, encourage everyone to increase their PA, and not assume that people will return to prior levels of PA on their own.
- 5.6. Waller J, Rubin GJ, Potts HWW, Mottershaw A, Marteau TM (2020). 'Immunity Passports' for SARS-CoV-2: An online experimental study of the impact of antibody test terminology on perceived risk and behaviour. *BMJ Open*, 10, e040448. doi: 10.1136/bmjopen-2020-040448: Using the term "Immunity" (vs "Antibody") to describe antibody tests for SARS-CoV-2 increased the proportion of people believing that an antibody-positive result means they have no risk of catching coronavirus in the future, a perception that may be associated with less frequent hand washing.

GOV.UK publication

- 5.7. I also wrote the following piece published on GOV.UK about how to evaluate digital health products during the pandemic: Potts H, Death F, Garattini C, Gomes M, Raftery J, Bondaronek P (2020). Rapid evaluation of digital health products during the COVID-19 pandemic. GOV.UK collection. <https://www.gov.uk/guidance/rapid-evaluation-of-digital-health-products-during-the-covid-19-pandemic>

Media appearances

Questionnaire Response – Professor Henry Potts

- 5.8. I spoke to the media about the pandemic and our research on multiple occasions. While the media were interested in me in part as I was a SPI-B participant, I tried not to comment on SAGE workings, but I did comment extensively on what the research I had been involved in had found. My own notes on media appearances included the following, but am unfortunately unable to recall what we discussed: LBC (2021). Camilla Tominey, 5 Dec 2021. LBC (2021). Nick Ferrari, 29 Nov 2021, BBC (2020). Today, 25 Sep 2020. BBC Radio 4.
- 5.9. In addition, I have kept note of the following as media connected to our BMJ paper (4.64 above), but I've not kept track of which appearances were me and which were my colleagues (usually Louise Smith): BBC London (2021). Early Breakfast, 1 Apr 2021. BBC London, BBC (2021). Today, 1 Apr 2021. BBC Radio 4. <https://www.bbc.co.uk/programmes/m000tnq1>, BBC (2021). BBC Breakfast, 1 Apr 2021. BBC, Sky News (2021). Sky News Today [13:00], 1 Apr 2021. Sky News, Sky News (2021). Sky News Breakfast, 1 Apr 2021. Sky News, BBC (2021). 5 Live Breakfast, 1 Apr 2021. BBC Radio 5 Live, Channel 5 News (2021). Channel 5 News, 1 Apr 2021. Channel 5.
- 5.10. We focused in these on describing the results of the paper, namely that adherence to Test, Trace and Isolate was poor and that this seems to reflect difficulties in following the recommended behaviours.
- 5.11. Most of my media work was explaining the results from our published research. The exception is a set of media appearances on the “pingdemic”. I think the following covers these: LBC (2021). Nick Ferrari, 30 Jul 2021, ITV (2021). Good Morning Britain, 27 Jul 2021, Sky News (2021). Sky News Tonight with Dermot Murnaghan. Sky News, 19:00, 20 Jul 2021, Times Radio (2021). Cathy Newman with Times Radio Drive. Times Radio, 16 Jul 2021, LBC (2021). Andrew Pierce. LBC, 10 Jul 2021, BBC News Reality Check team (2021). Are lots of people deleting the NHS Covid app? BBC News: Reality Check, 9 Jul 2021 (updated 17 Jul 2021). <https://www.bbc.co.uk/news/57779371>, BBC Radio 5 Live (2021). Stephen Nolan. BBC Radio 5 Live, 9 Jul 2021 <https://www.bbc.co.uk/sounds/play/m000xmr5> [41 minutes in], Sky News (2021). Sky News Tonight with Dermot Murnaghan. Sky News, 19:00, 9 Jul 2021, Jenne A (2021). Government urges people not to delete the Covid app.

Channel 4 News, 9 Jul 2021. <https://www.channel4.com/news/government-urges-people-not-to-delete-the-covid-app>, BBC Radio 4 (2021). Today. BBC Radio 4, 9 Jul 2021. <https://www.bbc.co.uk/sounds/play/m000xmyv> [go to 1:51:00 in]

- 5.12. My central thesis in these appearances was that the NHS COVID-19 App was behaving as it was meant to and that the “pingdemic” was merely a manifestation of rising case numbers, *i.e.* the pandemic itself. This was countering a narrative that was in the media and which was fostered by some Government statements that stated or implied that the App was at fault.

6: Views as to whether the work of the above mentioned groups in responding to the COVID-19 pandemic (or the UK’s response more generally) succeeded in its aims

- 6.1. I am happy to expand on the points made below if helpful for the Inquiry.
- 6.2. My experience of SPI-B and other SAGE work is that they worked well at discussing and disseminating theory and research findings relating to the pandemic, and in terms of producing useful reports for others. Meetings encouraged contribution and discussion. Disagreement was welcomed and voiced.
- 6.3. SPI-B began with a degree of secrecy, but I think SAGE moved quickly to encourage appropriate openness, with the swift publication of minutes and documents. However, we had difficulty disseminating the CORSAIR findings publicly, including through scientific publication. We were keen to publish our research findings from CORSAIR as we produced them: *i.e.* by submitting papers for publication in academic journals, preceded by uploading preprints. However, the DHSC blocked us from doing so initially. They argued that our reports were being sufficiently disseminated as needed within Government and the NHS, although that was not my experience. (For example, I was in meetings discussing pandemic response with the NHS where CORSAIR results would have been useful and the people I was talking to knew nothing of the work we’d be doing.) After much back and forth, DHSC gave us permission to start publishing. A few weeks later, we submitted our first paper to a journal on 26 November 2020 (published as 4.64 above).

- 6.4. While SPI-B produced a large amount of advice, the mood in the group was that we often felt that Government wasn't listening to us. We were reassured by Government Chief Scientific Advisor Sir Patrick Vallance that they were, but they often didn't follow our advice, in particular around the need to provide support for people to be able to follow desired behaviours and around how best to do clear communication on health issues.
- 6.5. In retrospect, we – the country, the Government, the scientific advisors – got some things wrong. Early concerns about behavioural fatigue and compensation behaviours were overstated. With the CORSAIR findings, we sought to push back later on against behavioural fatigue concerns (see 4.51). Government health advice for too long focused on droplet transmission rather than airborne transmission. We should have switched sooner to focusing on mask-wearing and air quality rather than on handwashing and wiping down surfaces.

The composition of the groups and/or their diversity of experience

- 6.6. The composition of the groups and their diversity of expertise seemed sensible. There was a good consideration of what people from different disciplinary backgrounds could bring. There was recognition of the value of having an ethnically diverse set of participants.

The way in which the groups were commissioned to work on the relevant issues

- 6.7. The notional system as explained to us (SPI-B participants) was that Government would ask us SAGE and its sub-groups questions and we would answer those questions. In practice, the precise wording of those questions was iteratively developed with us, which was useful. When we felt Government was not asking the right questions, we had some opportunity to raise issues, to prompt questions.

The resources and support that were available

- 6.8. GO-SCIENCE were very helpful. The funding mechanism for the CORSAIR study, where pandemic preparedness funding had been pre-agreed, worked well. However, funding for other research did not come quickly enough.

6.9. The most important resource for research is staff. I note that pandemic disruption was particularly problematic for the many university post-doctoral researchers who are on fixed-term, short-term funding. We had a desperate need for research on COVID-19 while, at the same time, researchers on insecure contracts were struggling financially because of the disruption to their existing work. A university sector that is based on insecure contracts for junior staff cannot respond as well to national emergencies.

The advice given and/or recommendations made

Support for self-isolation

- 6.10. The main example coming out of the CORSAIR work where I felt advice was not followed was around support for people who were self-isolating. Based on established theory on behaviour change and then on the findings of CORSAIR, we argued for the benefits of greater support being given to those self-isolating. CORSAIR found that adherence to test, trace and isolate was poor. It was lower among those with a dependent child in the household, those with lower socioeconomic status, and those in greater financial hardship during the pandemic, among other factors. The Government was slow to introduce financial support for self-isolation and never did enough.
- 6.11. Our (the CORSAIR team's) 7 April 2020 report to DHSC ("Self-reported adherence to self-isolation", [9] above) warned that, "Self-reported adherence to self-isolation if symptomatic in the past seven days was poor". Our 11 May 2020 report to DHSC ("Self-reported adherence to self-isolation and social distancing measures", 4.11 above) said, "Reported adherence to self-isolation measures was low."
- 6.12. Our 12 June 2020 report ("Factors associated with uptake of the Test, Trace and Isolate (TTI) system", 4.22 above) said, "In the most recent survey wave, only 20% reported self-isolating after they developed symptoms of coronavirus. This proportion has dropped over time. This is also likely to be optimistic, given social desirability bias, recall bias, and confusion over what self-isolation is (e.g. some people select that they are staying at home, but also that they have been out to shop for groceries)." This report also started looking more at interpersonal variation, concluding, "Decreased likelihood of reporting that you had requested

- a test when symptomatic was associated with: living in London or the West Midlands (compared to the East Midlands), living in a more deprived area, and greater self-reported poverty”.
- 6.13. Our 14 July 2020 report to DHSC (“Factors associated with requesting an antigen test and self-isolating after developing symptoms of coronavirus”, 4.25 above) said, “Having left home since developing symptoms of coronavirus was strongly associated with not knowing the key symptoms of coronavirus, being a key worker, having a dependent child, lower socioeconomic grade, having a possible mental health morbidity (as measured by PHQ4) and having a household member with a chronic illness.” It recommended: “Greater financial and social provisions will help people with caring responsibilities (i.e. for dependent children, or household members with chronic illnesses) and with greater financial difficulties, which is likely to increase the percentage of people who do not leave home at all if they develop symptoms of coronavirus.”
- 6.14. Our CORSAIR work was made available as a paper for discussion at SAGE meeting 55 on 3 September 2020, as at:
<https://www.gov.uk/government/publications/adherence-to-the-test-trace-and-isolate-system-results-from-a-time-series-of-21-nationally-representative-surveys-in-the-uk-3-september-2020>. SAGE 55 minutes read: “SAGE noted evidence of low adherence (self-reported) to self-isolation and reiterated that testing is one part of a wider system: without adherence to isolation, its impact on interrupting transmission would be more limited.”
- 6.15. A 16 September 2020 SPI-B paper focused on “The impact of financial and other targeted support on rates of self-isolation or quarantine” (at <https://www.gov.uk/government/publications/spi-b-impact-of-financial-and-other-targeted-support-on-rates-of-self-isolation-or-quarantine-16-september-2020>). This recommended that, “Self-isolation rates would likely be improved with the addition of different forms of support.” It then listed “Financial support”, “Tangible, non-financial support”, “Information” and “Emotional support”. It concluded: “Provision of a support package that encompasses these four components – but particularly the first - should be rolled-out and evaluated as a matter of urgency in order to realise the considerable investment made in testing programmes and the potential of testing and self-isolation to contribute

to economic recovery and prevention of disease.” This was considered at SAGE 57 (17 September 2020), which minuted: “Current rates of full self-isolation of people with symptoms including cough, fever or anosmia are likely very low (moderate confidence). A package of support measures including financial and non-financial support; improved communication and advice; and greater access to social or psychological support should be considered to address disincentives to self-isolation and quarantine.”

Other examples

- 6.16. We (CORSAIR) raised concerns about high levels of mental health distress and the Government’s response could have been better. Our 20 April 2020 report to DHSC (“Keeping well physically and psychological wellbeing during the Government “lockdown”, and impact on adherence to social distancing measures”, 4.15 above) raised concerns about both physical and psychological wellbeing. Our 7 May 2020 report to DHSC (“Psychological wellbeing and self-reported general health”, 4.16 above) said, “Data indicate that mental wellbeing is lower than average, and mental distress is higher than average.
- 6.17. Particularly notable is that levels of probable depression are higher than from a study of a population who were disrupted by flooding in 2013-14, while levels of probable anxiety are similar to those who were disrupted by flooding.” It continued: “Poor mental wellbeing was strongly associated with feeling less connected to others and increased self-reported poverty”. Our 4 June 2020 report to DHSC (“Ethnicity, COVID-19-related behaviours, attitudes and outcomes”, 4.20 above) said, “There are very high levels of mental health problems in some groups: additional help should be directed at these. The variation by ethnicity is largely related to systemic differences in society, but these cannot be immediately solved, so targeting support at ethnic minority groups would be a sensible strategy. Support should also be targeted around those in financial difficulty and those with pre-existing conditions.”
- 6.18. Another topic I recall being discussed, although I had no input to the discussion, was how SPI-B recommended de-emphasising punitive enforcement of COVID-19 regulations. This advice did not seem to get through to Government.

6.19. A concern I raised with some of the reports I saw was in not considering differences among those identifying as White. Data analyses would often split the population into White and BAME. However, experiences were often very different within those identifying as White. Much ethnicity data does split this group down further into British, Irish, Gypsy/Irish Traveller/Roma, and White Other. Where sufficient data allows, this (or just White British versus White Other) is a useful distinction to make.

The extent to which the groups worked effectively together

6.20. On occasion discussion within the SAGE sub-groups felt siloed. We had expertise on behaviour, but sometimes were uncertain as to what the epidemiology implied or what data would work best to support modelling.

The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness

6.21. No further comments.

7: Lessons that can be learned

- 7.1. I am happy to expand on the points made below if helpful for the Inquiry.
- 7.2. We found that having pre-planned research, with associated funding, worked well for the CORSAIR project, and we were able to generate a range of insights that were useful for others. More schemes like this would be wise.
- 7.3. More generally, UK research can respond quickly to a national emergency, but would be able to do so better if junior researchers had more stable funding. Precarious employment practices for early career researchers were damaging. The system needs to have some capacity built into it, be that through units in universities or teams in bodies like UKHSA.
- 7.4. The re-organisation of Public Health England into the UK Health Security Agency and the DHSC partway through the pandemic was a bizarre and disruptive decision. I was partly on a secondment to PHE at the time (on non-pandemic-specific work). The re-organisation was distressing for PHE employees, who were working flat out on pandemic response or other important functions. It was hugely wasteful of people's time as those of us working at PHE had to spend time working out what would happen to projects and re-arguing

the need of those projects. The project I was working on was prematurely ended by the dissolution of PHE. Other work was delayed while structures were re-invented at UKHSA and DHSC. Radical re-organisations are more costly than policymakers seem to notice. They should be avoided during crises.

- 7.5. We need to work on improving the relationship between academics, government and other contractors during projects like CORSAIR and the DHSC's associated survey work during a pandemic, to understand each other's context and needs. We established better relationships over time, but more, earlier would have been valuable.

8: Documents that I hold

- 8.1. In addition to the reports and publications described above, I have draft copies of most of these from the various stages of writing. I have some additional research notes I kept during the work, generally notes on how data is coded and was analysed. I have emails and maybe other electronic messages from discussions with the CORSAIR team, with the Ethnicity Sub-Group and for other projects. I am happy to make these available on request.