

Applying Behavioural Science to Combating Pandemics

Susan Michie

Professor of Health Psychology, UCL, UK

Melbourne Centre for Behaviour
Change, February 2023



@SusanMichie

Acknowledgments

1. I'd also like to acknowledge the Traditional Owners of the unceded land on which this event is being held, the Wurundjeri people of the Kulin Nation. It is a privilege to be on this land and I pay my respects to Elders, past, present and future
2. The Grimwade family for their bequest to the University of Melbourne that has enabled the Miegunyah Distinguished Visiting Fellows program and this visit
3. My many wonderful collaborators, especially Professor Robert West, an amazing intellectual as well as life partner, who will be contributing to this conference





www.ucl.ac.uk/behaviour-change/
[@UCLBehaveChange](https://twitter.com/UCLBehaveChange)

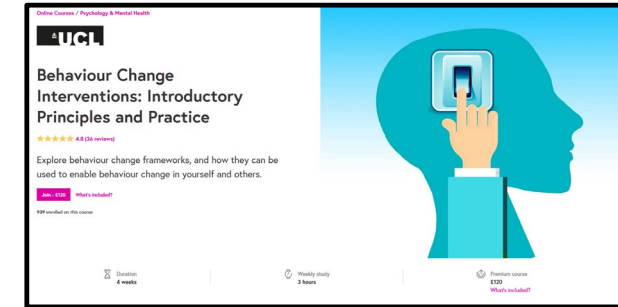


Who are we?

- Researchers, consultants, trainers & practitioners in behaviour change
- A cross-disciplinary community of academic experts at UCL & beyond
- Global network of > 4,000 contacts

Activities include

- International Schools; online short course
- Annual Conference
- MSc in Behaviour Change
- Hubs for exchanging skills, ideas, resources
 - Environment & Behaviour
 - Digi-hub



<https://www.futurelearn.com/courses/behaviour-change-interventions>



COVID-19 Scientific Advisor roles



indie_SAGE

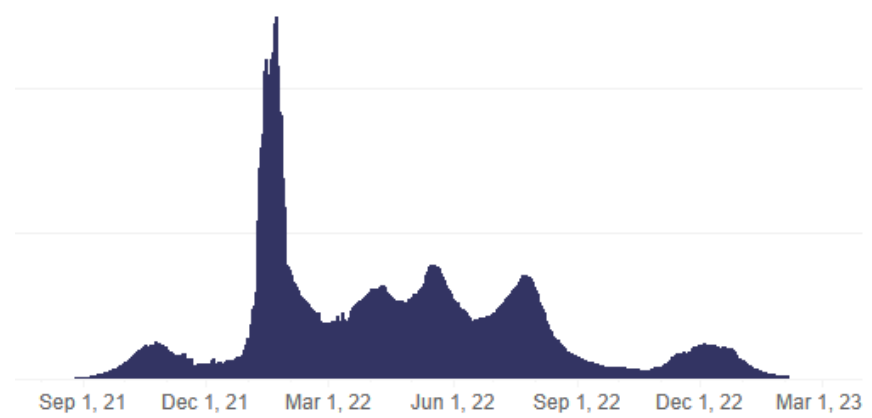


1. UK Government's advisory group SAGE
 - behavioural science sub-group
2. Independent SAGE
 - set up by previous Chief Scientific Advisor to complement scientific work of SAGE
3. Served as COVID-19 consultant advisor to WHO Behavioural Insights team
4. Lancet COVID-19 Commission Public Health Taskforce
5. Participating in UK Covid-19 Inquiry

Covid19 – where are we?

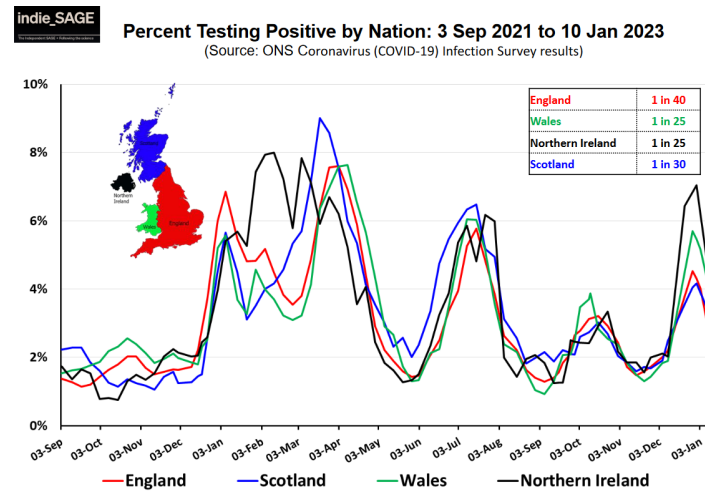
Active cases in Victoria

Last 30 days



Australia: 2600 died since Oct 2021

Taiwan, Japan and South Korea have rising numbers of cases & high incidence rates

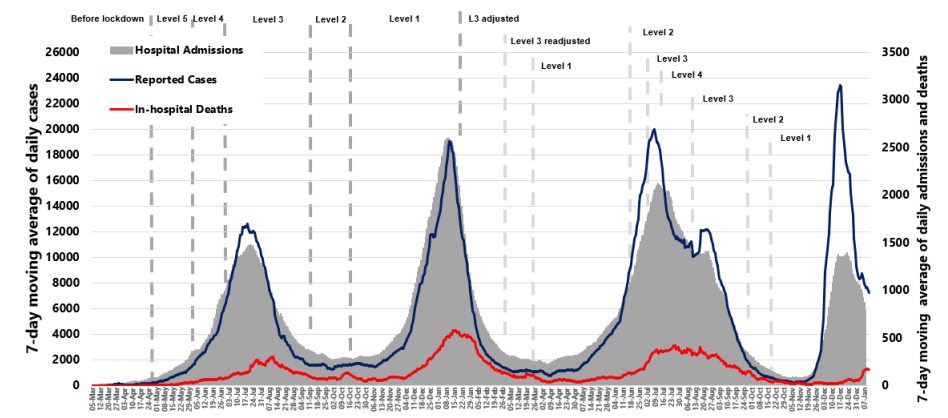


UK: new wave starting

← About 100 daily deaths with COVID19 on death certificate

Covid-19 in South Africa

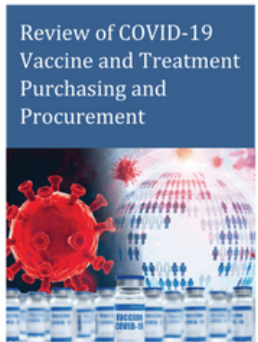
7-day moving average of new cases, hospital admissions and in-hospital Covid-19 deaths up to - 11 January 2022



Halton's independent review of Australia's COVID-19 vaccine and treatment procurements

- Australia could face a “catastrophic” new Covid-19 variant, which may render vaccines ineffective
- Contradictory health advice to government is undermining confidence in vaccines
- Advisory structures need an overhaul to be ready for another emergency
- Even after the change of government, nobody is properly in charge of the Covid-19 response

BRIEFING PAPER



Review of COVID-19 vaccine and treatment purchasing and procurement: executive summary and recommendations

27 SEP 2022

Jane Halton
PUBLISHER
Department of Health and Aged Care (Australia)



Professor
Jane Halton

The problem of new variants – April 2021

THE CONVERSATION

Academic rigour, journalistic flair

New COVID variants have changed the game, and vaccines will not be enough. We need global 'maximum suppression'

Published: April 6, 2021 6.05am AEST



Susan Michie

Professor of Health Psychology and Director of the UCL Centre for Behaviour Change, UCL



Chris Bullen

Professor of Public Health, University of Auckland



Jeffrey V Lazarus

Associate Research Professor, Barcelona Institute for Global Health (ISGlobal)



John N. Lavis

Professor and Canada Research Chair in Evidence-Informed Health Systems, McMaster University



John Thwaites

Chair, Monash Sustainable Development Institute & ClimateWorks Australia, Monash University



Liam Smith

Director, BehaviourWorks, Monash Sustainable Development Institute, Monash University



Salim Abdool Karim

Director, Centre for the AIDS Program of Research in South Africa (CAPRISA)



Yanis Ben Amor

Assistant Professor of Global Health and Microbiological Sciences, Executive Director - Center for Sustainable Development (Earth Institute), Columbia University

A multinational Delphi consensus to end the COVID-19 public health threat

Published: 03 November 2022

386 experts from
112 countries

Some key messages

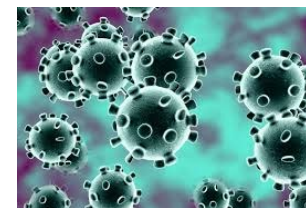
1. The pandemic is not over. We cannot be complacent
2. We've reached an unstable equilibrium in which people are still getting ill and some are dying
3. Still far too many people unvaccinated, infection is waning among those who have not had boosters, and the virus continues to evolve
4. International collaboration of researchers, practitioners and politicians is essential to get beyond the pandemic

This talk in 4 parts

1. Applying behavioural science to pandemic management
2. Addressing inequalities
3. Engaging the public, press and politicians in scientific advice
4. Funding of behavioural research

Human behaviour ...

- Is at the heart of causing and transmitting:
 - pandemic infections, the climate emergency, antimicrobial resistance and other health threats & crises
- ... and at the heart of preventing and getting out of them



World Health Organization



Tedros, WHO Director-General January 2022

*I want to make **behavioural insights** an essential part of how we promote and ensure better health for all.*

*As the global public health leader, WHO cannot achieve its ambitious goal of transforming global health and the health of more than 7 billion people **without a clear understanding of people's health-related behaviours***



What is Behavioural Science?

- The scientific study of behaviour
 - what enables it
 - what prevents it
 - how best to elicit and maintain it.
- It involves
 - collecting and analysing data
 - synthesising evidence
 - building **models and theories** to predict behaviour
 - developing & evaluating interventions to influence it.

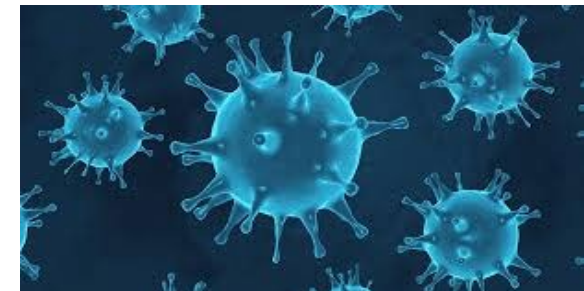
Examples of psychologists advising Governments

1. Susan Michie, Covid-19 Behavioural Science Group, Scientific Advisory Group in Emergencies, **UK**
2. Molly Byrne, Behaviour Change Advisory Group, National Public Health Emergency Team Communications, **Ireland**
3. Marijn de Bruin, Corona Behavioural Unit, National Institute of Public Health and the Environment, **Netherlands**
4. Marta Marques, COVID-19 Behavioural Science Task Force, **Portugal**
5. Matti Heino, Behavioural Advisory Group, Prime Minister's Office, **Finland**
6. Ralph Hertwig, Covid-19 Expert Council of the Federal Government, **Germany**
7. Justin Presseau, Behavioural Science Working Group, Ontario COVID-19 Science Advisory Table, **Canada**



UK Government COVID-19 Behavioural Advisory Group

- Part of Government's Scientific Advisory Group (SAGE) advising Cabinet Office
- Multidisciplinary
 - >30 psychologists (health, social, emergency), anthropologists, sociologists, behavioural scientists, communication experts, implementation scientists
- Supported by a professional secretariat
- Advice drew on range of sources
 - e.g. published literature, unpublished reports, surveys, interviews, focus groups and expert opinion
- Published commissioned reports, dissemination sessions for policy-makers



Example: Sustaining changed behaviours long-term



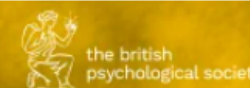
▼ Topics


→ [Coronavirus \(COVID-19\)](#) | Latest updates and guidance

[Home](#) > [Coronavirus \(COVID-19\)](#) > [SPI-B: Sustaining behaviours to reduce SARS-CoV-2 transmission](#)


[Scientific Advisory Group for Emergencies](#)

British Journal of
Health Psychology



Original Article |  Open Access |  

Staying 'Covid-safe': Proposals for embedding behaviours that protect against Covid-19 transmission in the UK

Susan Michie  ▼, Robert West ▼, Nick Pidgeon ▼, Stephen Reicher ▼, Richard Amlôt ▼, Laura Bear ▼

First published: 31 August 2021 | <https://doi.org/10.1111/bjhp.12557> | Citations: 3

Research and analysis

SPI-B: Sustaining behaviours to reduce SARS-CoV-2 transmission, 22 April 2021

Published 5 July 2021

<https://www.gov.uk/government/publications/spi-b-sustaining-behaviours-to-reduce-sars-cov-2-transmission-30-april-2021/spi-b-sustaining-behaviours-to-reduce-sars-cov-2-transmission-22-april-2021>

UK behavioural science: some positive impact

25 published reports on Government website e.g.

<https://www.gov.uk/government/publications/spi-b-sustaining-behaviours-to-reduce-sars-cov-2-transmission-30-april-2021/spi-b-sustaining-behaviours-to-reduce-sars-cov-2-transmission-22-april-2021>

1. Measures we judged to be harmful were limited or delayed
 - e.g. limited scope of vaccine passports; delayed monetary fines for self-isolation
2. More liberal social bubbles
3. Designed and rolled out community champion programme
 - contributed to higher vaccine uptake among minoritised groups
4. Achieved some evaluations of behavioural interventions

Whose behaviours?

- Citizens
- Health professionals
- Employers
- Service and environmental planners
- Business leaders
- Policy-makers at national and local level
- Politicians ...



Citizens' behaviour and pandemics: key areas

1. Personal protective behaviours

- Distancing, outdoors/ventilation, face coverings, hand/surface hygiene



2. Adherence to public health measures, inc.

- Test, Trace, Isolate Systems
 - Having a test, giving contacts, isolating



3. Restrictions inc. border controls, lockdowns Adherence to rules

4. Vaccination uptake

- Uptake is behaviour



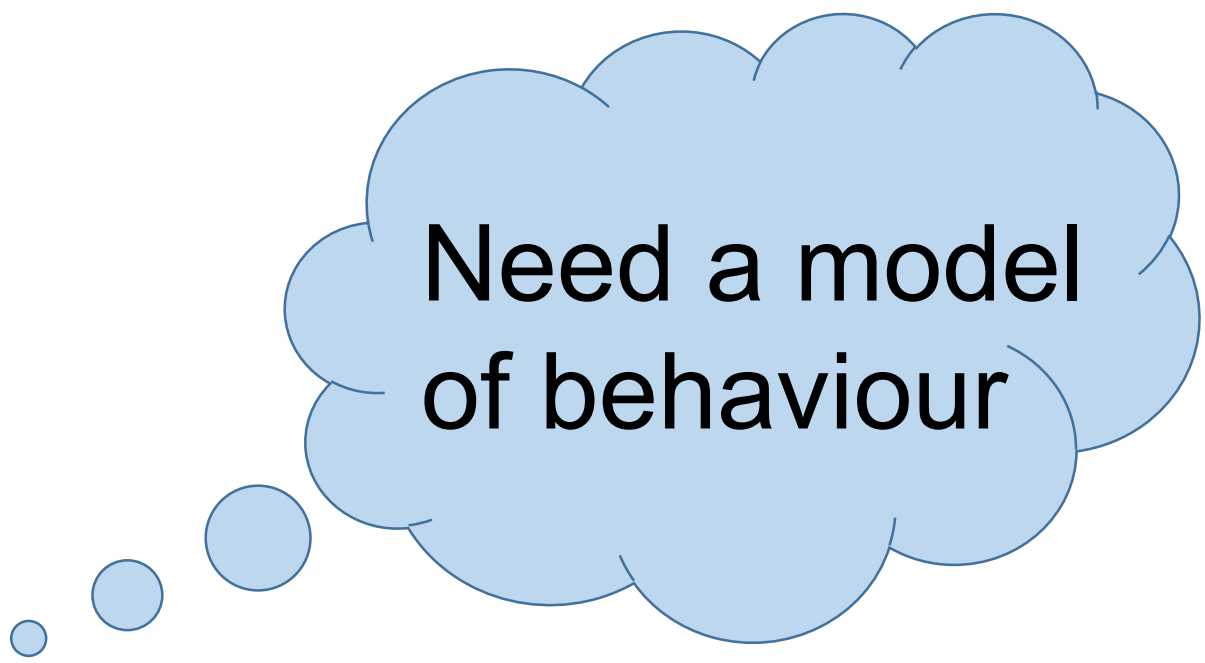
Managing Covid-19 depends on ...

... a good understanding of behaviour and
behaviour change

and

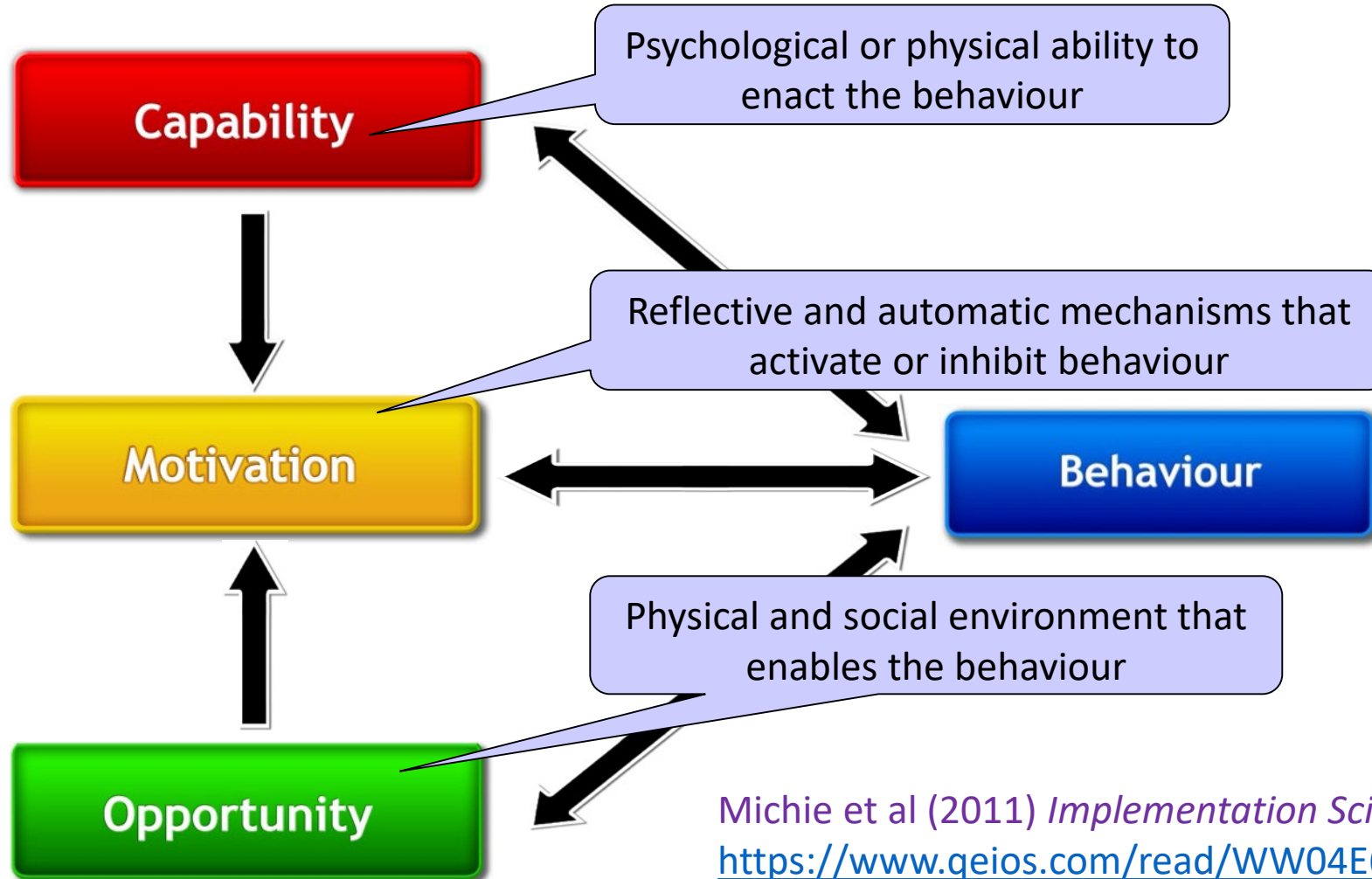
interventions that reflect that understanding

Understand behaviour in order to intervene ...

A light blue thought bubble with a black outline, containing the text "Need a model of behaviour". The bubble is connected to three smaller circles of increasing size, leading from the bottom left towards the main bubble.

Need a model
of behaviour

The COM-B model: Behaviour occurs as an interaction between three necessary conditions



Michie et al (2011) *Implementation Science*;
<https://www.geios.com/read/WW04E6.2>

“Positive approach, avoid blame and focus on enabling people, rather than relying on enforcement ...”

SAGE recommended strategies by behavioural influence

CAPABILITY

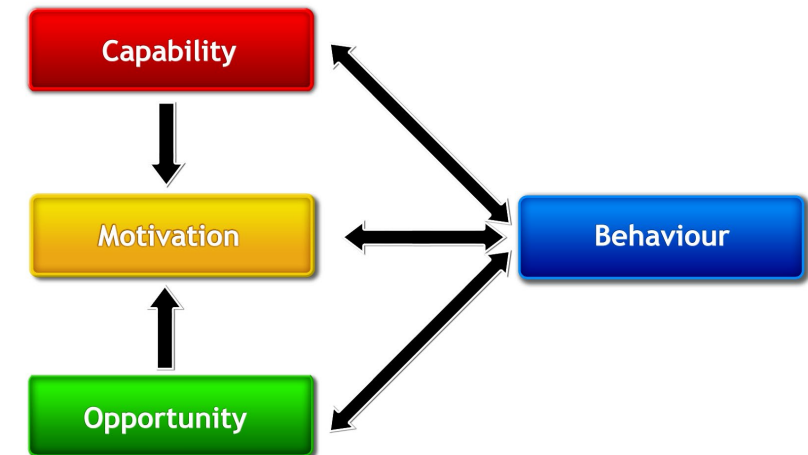
1. Focus on helping people identify and **manage risky situations**
2. Target **intensive information** where needed

MOTIVATION

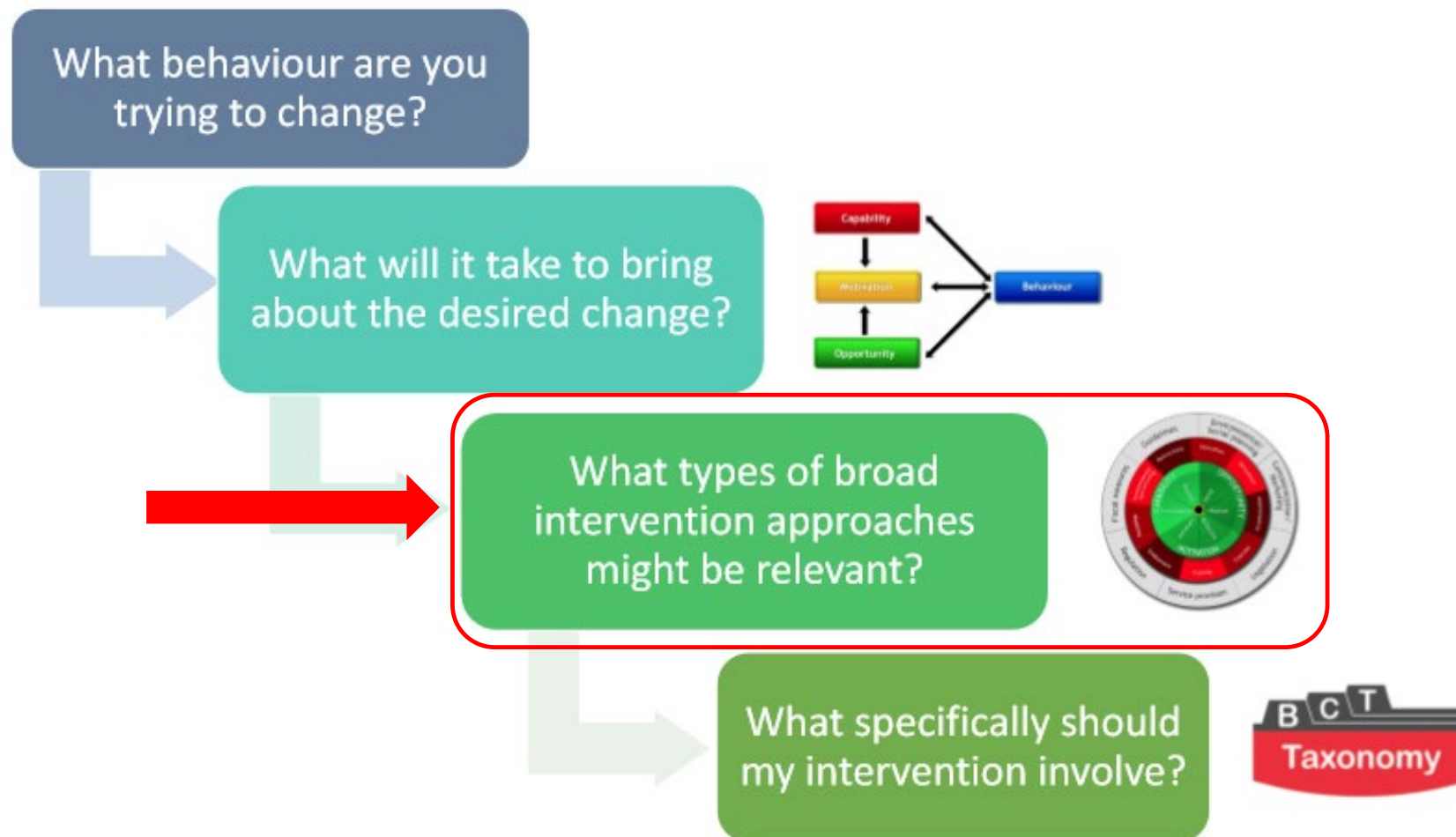
1. Provide **positive feedback**
2. Emphasise that **everyone has an important part to play**

OPPORTUNITY

1. Promote and support **positive alternatives**
2. Help people **change their environments and form new social customs**
3. Target **practical support** where needed

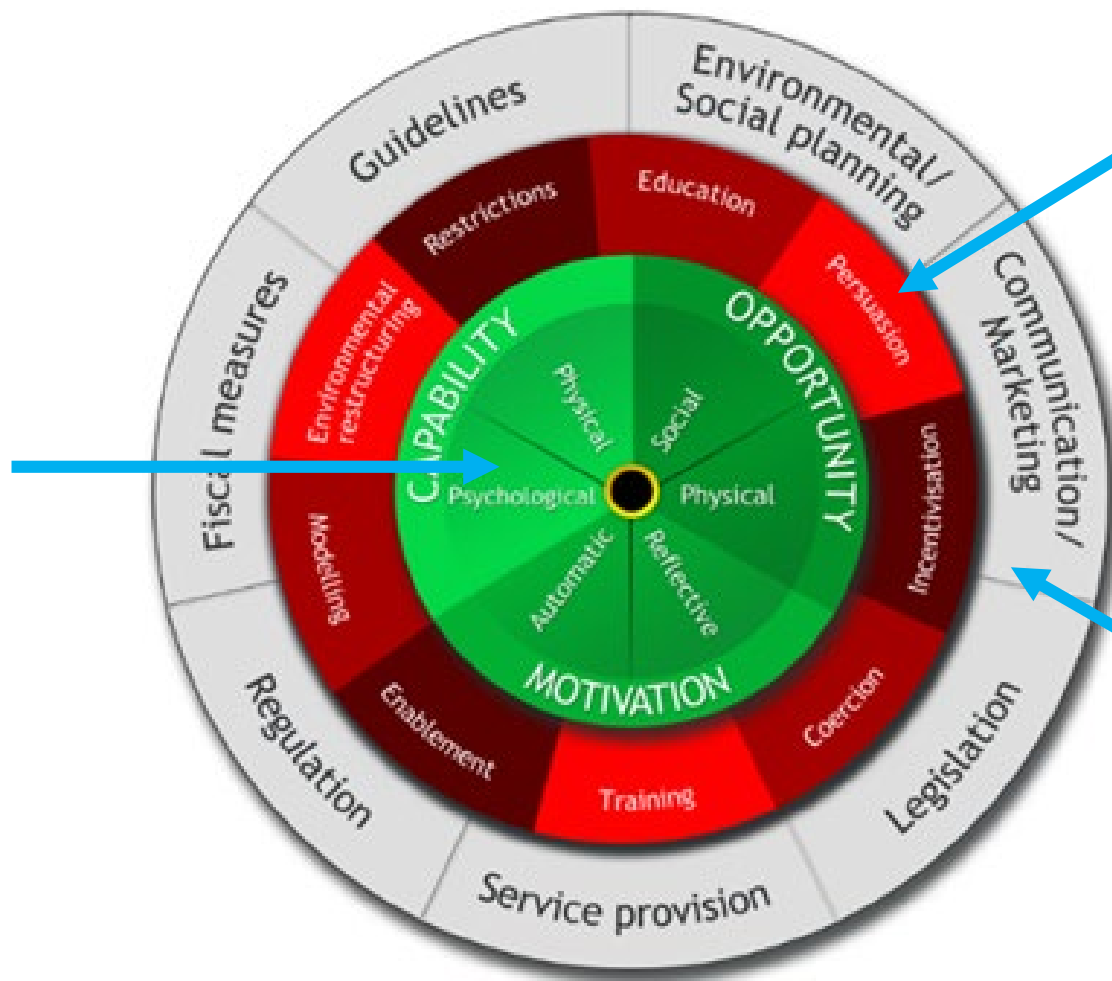


This can be linked to a framework of interventions



The Behaviour Change Wheel

COM-B Model



Intervention Types

Policy Options

For more information

Implementation Science

Home About Articles Collections Submission Guidelines

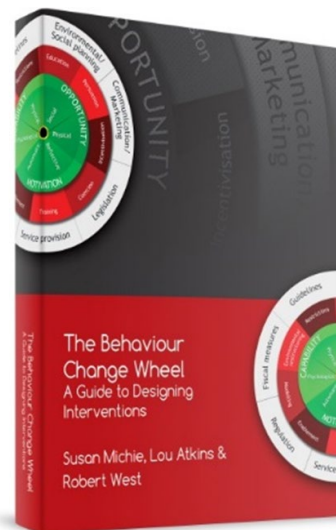
Research | [Open Access](#) | Published: 23 April 2011

The behaviour change wheel: A new method for characterising and designing behaviour change interventions

[Susan Michie](#) , [Maartje M van Stralen](#) & [Robert West](#)

[Implementation Science](#) 6, Article number: 42 (2011) | [Cite this article](#)

427k Accesses | 2850 Citations | 673 Altmetric | [Metrics](#)



<http://www.behaviourchangewheel.com/>

User friendly guide available free on Centre for Behaviour Change website

www.ucl.ac.uk/behaviour-change



Public Health
England

Protecting and improving the nation's health

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933328/UFG National Guide v04.00 1 1 .pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933328/UFG_National_Guide_v04.00_1_1.pdf)

Achieving behaviour change

A guide for national government

COVID19: Was advice implemented? Some was but ...



Judge Baroness Hallett

“Please provide examples that you may have of occasions on which your advice was misused or ignored, and/or when there were gaps between the advice that was provided and the policies and practices that were observed.”

WHO coronavirus briefing: Isolation, testing and tracing comprise the 'backbone' of response



UCL

Test, Trace & Isolate



Director-General of World Health Organization (WHO) Tedros Adhanom Ghebreyesus attends a news conference on the outbreak.

Image: Christopher Black/WHO Via Reuters

An example of UK Government not following advice

18 Mar 2020

Linda Lacina

Digital Editor, World Economic Forum

- The World Health Organization held a media briefing to update the public on the COVID-19 outbreak. Streamed live at 17.00 CET on Monday, 18 March.
- WHO officials stressed the importance for countries to test, isolate and trace new cases to suppress the spread of the virus.
- Suppression is essential for buying time to develop new treatments and manufacture much-needed equipment.

Test, Trace and Isolate depends on behaviour e.g.

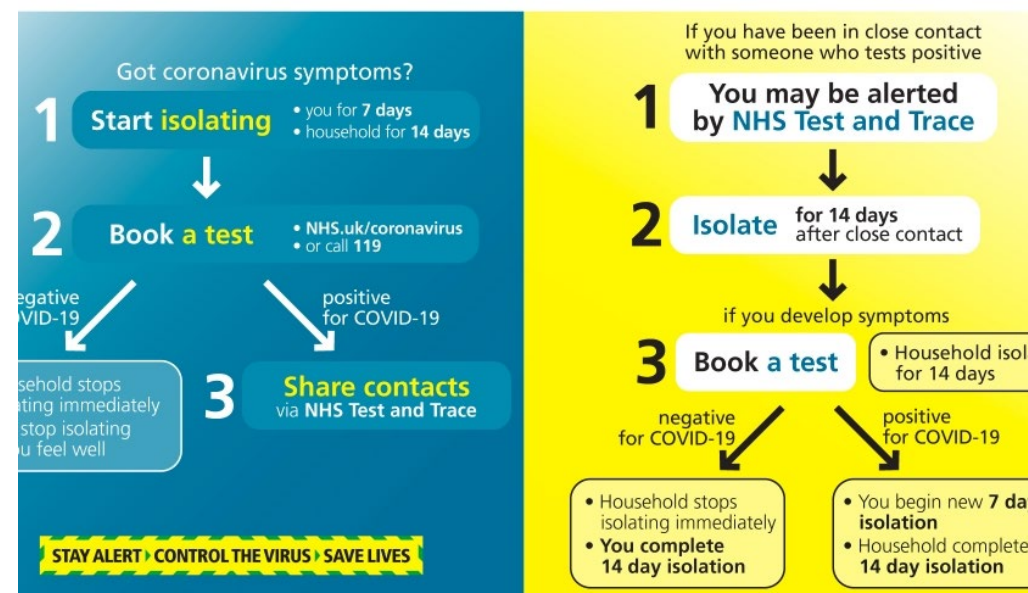
1. Get tested
 - quickly and
 - the right kind of test
2. Register test results
3. Provide information about contacts
4. Isolate if symptoms or positive result

Modellers estimate need >80% adherence to be effective

HM Government



NHS Test and Trace



Problems: getting tested, giving contacts, self-isolating

BMJ

Adherence to the test, trace, and isolate system in the UK: results from 37 nationally representative surveys

Louise E Smith,^{1,2} Henry W W Potts,³ Richard Amlôt,^{2,4} Nicola T Fear,^{1,5} Susan Michie,⁶ G James Rubin^{1,2}

<https://www.bmj.com/content/bmj/372/bmj.n608.full.pdf>

53 880 symptomatic people, March 2020- Jan 2021:

% isolating: <50%
% requesting test: <30%



<http://epr.hpru.nihr.ac.uk/our-research/research-themes/response/corsair-study>



Motivation or opportunity?: socio-economic differences

- **87% willing** to self-isolate
 - across all income levels
- Those with the **lowest household income**
 - **3x less likely** to be able to self-isolate
 - **6x less likely** to be able to work from home

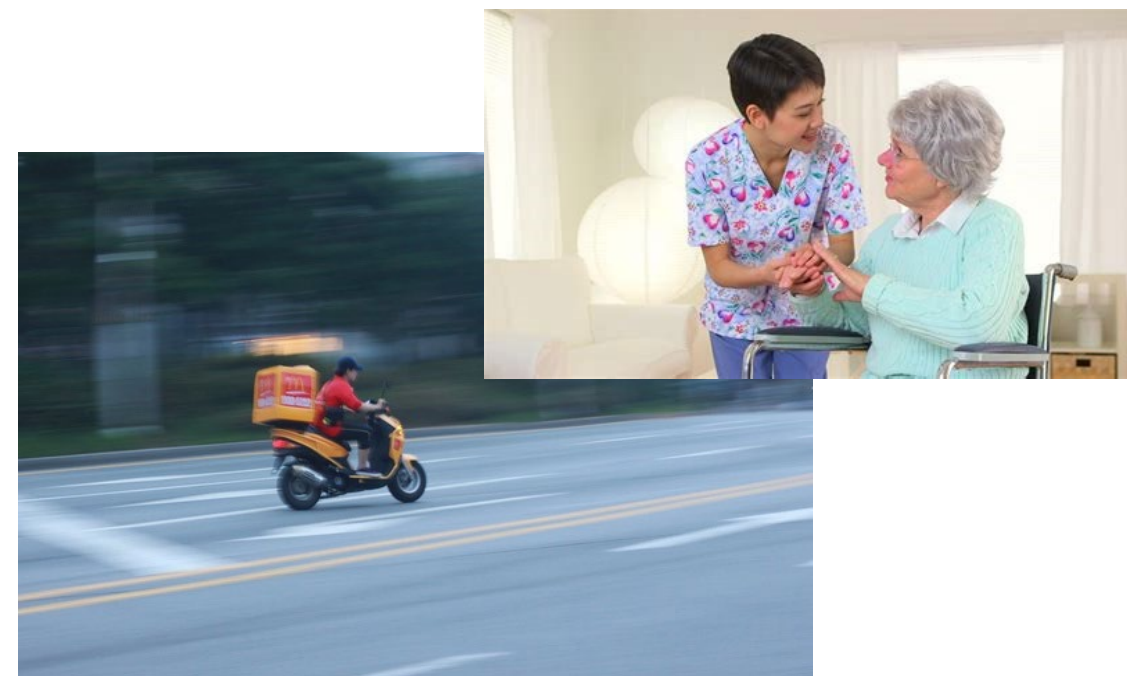
BMJ Open Early perceptions and behavioural responses during the COVID-19 pandemic: a cross-sectional survey of UK adults 2021;11:e043577. doi:10.1136/bmjopen-2020-043577

Christina Atchison ¹, Leigh Robert Bowman ², Charlotte Vrinten,³ Rozlyn Redd,¹ Philippa Pristerà,¹ Jeffrey Eaton,² Helen Ward^{1,2}



Problem is mainly lack of opportunity

- Predictors: **Low income job & financial hardship**
- Reasons:
 - **caring responsibilities** outside of the home,
 - **needing provisions,**
 - **Insecure work/income/employment**



Smith, Potts, Fear, Michie, Rubin (2021) Adherence to the test, trace and isolate system: results from a series of 37 nationally representative surveys in the UK (the COVID-19 Rapid Survey of Adherence to Interventions and Responses [CORSAIR] study) *BMJ*;372:n608

Advice to Government: Provide support for isolation

The impact of financial and other targeted support on rates of self-isolation or quarantine [SPI-B: 16 September 2020]

Key points

1. The effectiveness of the NHS test, trace and isolate system in reducing transmission of SARS-CoV-2 depends critically upon self-isolation of people who may have COVID-19 and their contacts
2. Current rates of full self-isolation are likely very low (<20%) based on self-report. They are particularly low among the youngest and the poorest, thereby likely contributing to inequalities in the impact of COVID-19.
3. Self-isolation rates would likely be improved with the addition of different forms of support. These include:
 - a. Financial support: Ensuring that those required to self-isolate would not experience financial hardship in doing so.
 - b. Tangible, non-financial support: Proactive outreach is needed, to identify and resolve any practical needs that people have (e.g. access to food, care for elderly relatives).



UK Government responded as if problem of motivation

- If on low income, **£500** (< minimum wage)
 - Only 1/8 eligible and only 30% receive it
- If don't adhere up to **£10,000 fine**
- Unintended consequences?
 - Concern that **fewer people get tested, give contacts, download app**, esp. disadvantaged groups
 - CORSAIR study: **<30%** with symptoms say they got tested
 - Evaluation of mass testing in Liverpool: only **8%** in disadvantaged communities got testing



POLITICS 25/01/2021 12:06 GMT | Updated 25/01/2021 13:07 GMT



Workers With Covid Too 'Scared' To Get Tested Over Fear Of Losing Wages, Dido Harding Says

Test and Trace chief says the problem is even bigger than a lack of isolation

EXCLUSIVE

COVID-19: Liverpool mass testing pilot not reaching city's poorest people, leaked documents show

Barriers to tests included poverty, a lack of digital skills, misinformation and a mistrust of the government.

Greater Manchester News

The people who thousands of Greater Manchester rejected from grant support

'I had an email saying: 'I hope you are feeling better now'

This talk in 4 parts

1. Applying behavioural science to pandemic management
2. Addressing inequalities
3. Engaging the public, press and politicians in scientific advice
4. Funding of behavioural research

Covid19 and inequalities

1. The virus itself

- Increased **transmission** in overcrowded, multi-generational household and public-facing, unsafe jobs
- Increased **harm** for those susceptible because of history of disadvantage and with other health conditions

2. Preparedness

- **Underinvestment** in public health, health services and social care
- **Poverty, inequality**, structural discrimination (leading e.g. to unequal vaccine uptake)
- **Insecurity** in living and working lives

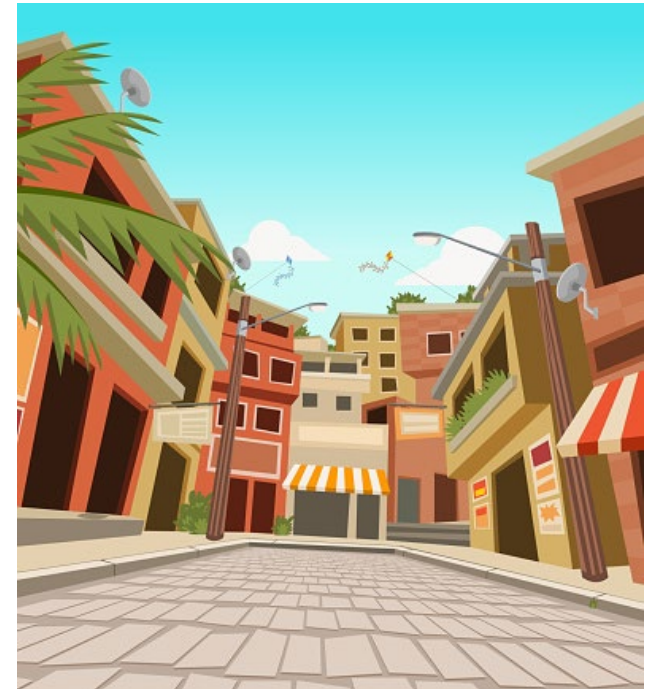
The UK: also Australia?

3. Government policies

- **Differential protection** e.g. those with mortgages more than renters and those with salaries more than precarious workers
- **Lack of PPE**, solving hospital overcrowding by moving patients to care homes
- **Lack of safety measures** in schools e.g. new spaces, recruiting staff who've left profession, ventilation
- **Educational divide**: Those at home without laptops, connectivity, places to study and family in a position to help **suffered most**
- **Lack of financial and job support for women** having to stay at home increased gender inequality
- Those in **black and ethnic** minority groups suffered disproportionately for all these reasons

Behaviourally and culturally sensitive

1. Recognise diversity of communities, groups within them and individuals within groups
 - Don't make assumptions
2. Learn about the beliefs, practices and contexts that influence health-related behaviours
3. Consult with and engage communities in their settings on their terms; likely to lead to ...
 - ...strategies likely to be more effective & get more buy-in
4. Co-create policies and measures with the communities that they are aimed at
 - Ideas, language, practicalities, media, trusted sources



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What should the science/policy relationship be?

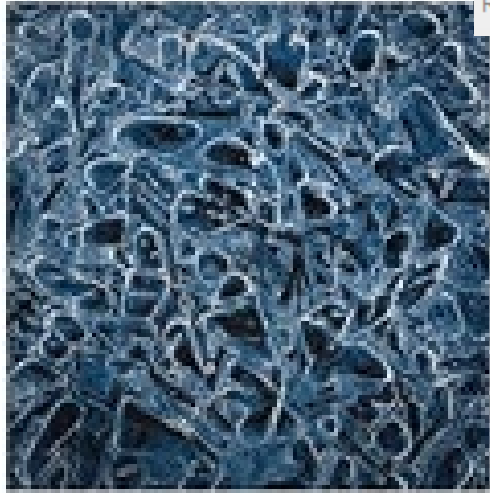
On the one hand ...

- Scientists
 - are not elected officials
 - often unfamiliar with the policy context

On the other hand ...

- Evidence doesn't implement itself
- Policymakers often don't understand the scientific advice nor how best to translate it
- Translation & implementation are themselves the subject of scientific enquiry

1. Shouldn't behavioural scientists be asked to advise on the **translation process itself**?
2. Shouldn't scientists **work in partnership with policymakers** along the translational pathway?



Lessons from the UK's handling of Covid-19 for the future of scientific advice to government: a contribution to the UK Covid-19 Public Inquiry

Susan Michie  , Philip Ball , James Wilsdon  & Robert West 

Received 13 Nov 2022, Accepted 13 Nov 2022, Published online: 11 Dec 2022

- 1) Government scientific advisors and advisory bodies should be more **independent** of political influence and interference
- 2) Government scientific advisors should be empowered to **challenge**
 - 1) misrepresentation and misuse by decision-makers of the scientific evidence, and
 - 2) undermining of public-health policies
- 3) Government scientific advice should be more **transparent** and advisors should engage more proactively with the **public**.

How to improve impact of scientific advice?

- Scientists have many ways of informing policy
- Channels include formal Government structures, *but also*
 - individual relationships
 - press, broadcasting and social media
 - ad hoc and informal groups and networks
 - In the UK 'Independent SAGE'

Independent SAGE

- Set up by former Chief Scientific Advisory in early 2020 following secrecy of Government Scientific Advisory Group in Emergencies (SAGE)
- Weekly broadcasts – data-based updates, specialist topics & guests, public Q& As
- Website to disseminate information
 - Broadcasts, reports, media clips

www.independentsage.org



20K subscribers, up to 35K viewers



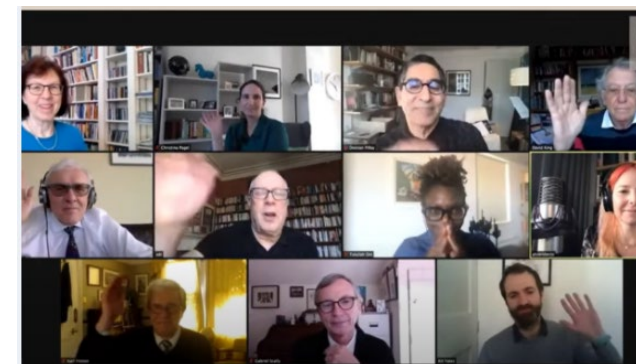
SUSAN MICHIE ON BBC NEWSNIGHT DISCUSSING LOCKDOWN

9 Jan 2021

Professor Susan Michie was a guest on BBC Newsnight discussing the current lockdown measures in...

... complementary to SAGE

- **Aim:** put scientific evidence and debate into the public domain, on basis that ...
 - **openness** and **transparency** leads to better understanding and better decision-making
 - it is the **responsibility of scientists** and those with specialist knowledge to **engage with the public and policy makers**, in order to ensure that science benefits all of society
- **Methods:** agile, proactive, multidisciplinary, small
 - >80 reports published on website
 - Communication via Twitter



indie_SAGE

Following the science



Independent SAGE ✓

@IndependentSage Follows you

An independent group of scientists providing transparent advice during the COVID crisis.

📍 UK 🌐 independentsage.org 📅 Joined May 2020

369 Following 178.8K Followers

Some thoughts about the advisory process

1. 'Hard border' between scientists and policy-makers can be unhelpful
2. Engagement between scientists and policy-makers at all stages of the translational pathway can make for better process
3. The process of translation is itself a subject of enquiry for social and behavioural scientists
4. Scientists have a responsibility to not only engage with advising Government but with society more broadly, including the public

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Investment in Public Health and Social Measures (PHSMs)

- *QUESTION : How much of \$3.3B global funding for COVID research spent on Public Health & Social Measures vs pharmaceutical interventions in 2020/2021?*
- ANSWER: **3-4%** (Research Investments in Global Health study; <https://www.the-ciru.com/resin>)



Future funding of behavioural research: ??

- Covid19 has demonstrated the value of investment in behavioural research in **health**; similar recognition increasing in **sustainability**
- UK recognition – two current initiatives I am involved with:

NIHR | Policy Research Unit
in Behavioural Science

<https://behscipru.nihr.ac.uk>

To inform government policy on health, preventing ill-health and health systems. We use behavioural science evidence, theory and methods to support decision-making

£5.5 million for 5 years

UKRI Economic
and Social
Research Council

Leadership team for a National
Capability in Behavioural Research

>£12m for 5 years

Establish a Centre for Doctoral
Training Plus in Behavioural Research

>£7m for 5 years

Acknowledgements

- Many colleagues from the UK Government's behavioural science advisory group to, and from Independent SAGE
- Funders of my COVID-19 research

NIHR | National Institute
for Health Research



Further details

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@susan.michie



www.ucl.ac.uk/behaviour-change/
[@UCLBehaveChange](#)