



#### DSI-NRF Centre of Excellence in Human Development



Individual and Society





COVID-19 SOCIAL AND BEHAVIOUR CHANGE THINK TANK – Recommendations for government

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# **Think Tank Panel**



#### **Co-leads:**

**Professor Shane Norris** is Director of the DSI-NRF Centre of Excellence in Human Development and Director of the MRC/Wits Developmental Pathways for Health Research Unit, Department of Paediatrics at the University of the Witwatersrand. He is a co-principal investigator of the Birth to Twenty Plus Cohort study and principal investigator of the Soweto First 1000 Days cohort. His research interests include child growth and development, obesity, and intergenerational risk of metabolic disease.



Associate Professor Catherine Draper – SAMRC DPHRU, CoE-HUMAN is an Associate Professor in the SAMRC/Wits Developmental Pathways for Health Research Unit at the University of the Witwatersrand. She has a background in Psychology and the social sciences and obtained her PhD in Public Health in 2005 from the University of Cape Town. Dr Draper's research interests include the development and evaluation of community-based health promotion interventions, behaviour change, implementation science, and early childhood health and development.

#### **Research assistant:**



**Dr Takana Mary Moyana – CoE-HUMAN** is a postdoctoral student in the SAMRC/Wits Developmental Pathways for Health Research Unit at the University of the Witwatersrand. She has a background in nutrition and public health and obtained her PhD in Public Health Nutrition in 2022 from North -West University. Dr Moyana's research interests include the development origins of health and disease and evaluation of community- based health promotion interventions.

#### **Invited members:**



**Mia Malan – Bhekisisa** is the health editor and heads up the health journalism centre, Bhekisisa. The centre runs critical thinking forums on health issues and health journalism trainings. Mia started reporting on health when she landed her first job at the SABC's Eastern Cape office in 1995.



**Nicola Christofides – Wits University** is an associate professor in public health with a focus on behavioral sciences. My research interests lie in designing and evaluating behavioral and structural interventions to prevent intimate partner violence (IPV) and HIV, and improve maternal health outcomes. Based in Johannesburg, South Africa, I am presently co-Principal Investigator (PI) for a cluster randomized controlled trial that is evaluating the National Department of Health flagship mobile health intervention to address maternal and infant health called MomConnect. Additionally, I am a co- investigator on the first longitudinal study in South Africa investigating the inter- generational transmission of violence. Young adults who were first interviewed in 2010 will be followed up. The study will be implemented across three generations: young adults, their children and their caregivers. I was the PI for a cluster randomized controlled trial that evaluated the effectiveness of the Sonke CHANGE community mobilization and advocacy intervention to reduce men's perpetration of sexual and/or physical intimate partner violence (IPV) and severity of perpetration by men over twoyears of follow-up (2015-2018). The study has contributed to deepening the understanding of the field about what works to prevent IPV and whether further investment in community mobilization and education interventions is justified.



**Prof Susan Goldstein – SAMRC Centre for Health Economics and Decision Science, PRICELESS SA** is a public health medicine specialist and Deputy Director and COO at the SAMRC Centre for Health Economics and Decision Science-PRICELESS SA. She worked at the Soul City: Institute for Social Justice (SCI) for over 22 years, communicating about Health through drama with both adults and children.



Pathmanathan (Pat) Govender, Behavioural Science Practitioner – Pat pioneered the behaviour change approach in communications in South Africa in the year 2000 when he established Red Chili Communications - South Africa's first marketing and advertising agency specialising in behaviour change and social marketing. He is a specialist behavioural science and behavioural change communications practitioner, with a long-spanning career in key positions in South Africa. He has served as the Communications Adviser to the late Professor Kader Asmal during his tenure as Minister of Water Affairs. He also spearheaded the Communications Division of the Constitutional Assembly (CA), which was responsible for drafting the South African Constitution. The CA was headed at the time by the now President of South Africa, Cyril Ramaphosa. Today, Pat runs The Behaviour Change Agency (BCA), South Africa's first specialist behaviour change agency that combines behavioural and data science with creativity to solve major societal and business challenges. They have run numerous behavioural interventions in the areas of Early Childhood Development, Green Buildings, Addressing Alcohol Abuse, Financial Empowerment and Mental Health, amongst others. He holds an MSc in Behavioural Science from the London School of Economics and an MBA from the University of Birmingham (UK).



Associate Professor Lucia Knight – University of Cape Town is an Associate Professor and the Head of the Division of Social and Behavioural Sciences in the School of Public Health at the University of Cape Town, South Africa. She has training in social anthropology, family demography and population studies with a PhD from the London School of Hygiene and Tropical Medicine. Her current research focuses on the development of social and behavioural interventions to improve access to HIV treatment and care and ART adherence. She is also conducting research on the quality of maternal health care and is exploring new areas of research in sexual and reproductive health. She has extensive teaching and supervision experience and convenes the Social and Behavioural Sciences track of the master's in public health, including the teaching of qualitative research methods.



**Prof Zoleka Soji – Nelson Mandela University** works as a HOD and Associate Professor at Nelson Mandela University. She is an associate professor in the field of social development professions, with many years of experience in social work in disadvantaged areas of South Africa.



Prof Mark Tomlinson - Stellenbosch University is based in the Department of Psychology at Stellenbosch University. His scholarly work has involved a diverse range of topics that have in common an interest in factors that contribute to compromised maternal health, to understanding infant and child development in contexts of high adversity and how to develop community based intervention programmes. He has completed four large randomised controlled trials aimed at improving maternal and child health and child development. His team is currently following up the cohorts in two of these trials - children aged three years and aged 13 years. Prof Tomlinson is one of two Research Directors of PRogramme for Improving Mental health carE (PRIME). The goal of PRIME is to generate evidence on the implementation and scaling up of treatment programmes for priority mental disorders in primary and maternal health care contexts in five countries (Ethiopia, India, Nepal, South Africa and Uganda) He has received research grants from the Wellcome Trust (UK), National Institute of Alcohol Abuse and Alcoholism (NIAAA); National Institute of Drug Abuse (USA); National Institute of Child Health and Human Development; the Department for International Development (DfID -UK), and recently from Grand Challenges Canada. He has published over 100 papers in peer reviewed journals, edited two books and published numerous chapters. He is an Associate Editor of Infant Mental Health Journal, and is also on the Editorial Boards of PLoS Medicine; Psychology, Health and Medicine; International Health; and Mental Health and Prevention.



Associate Professor Alastair van Heerden – HSRC is Research Director of the Centre for Community Based Research at the Human Sciences Research Council (HSRC) and an Honorary Associate Professor in Clinical Medicine at the University of Witwatersrand, South Africa. He has over 10 years of experience conducting clinical, behavioural and community-based research throughout East and Southern Africa, the United States, Nepal and Brazil. He has an interdisciplinary focus to his research which combines his interest in technology for development and public health with the aim of improving access to care for underserved and poorly resourced communities.

## **Executive summary**

- The COVID-19 Behaviour Change Think Tank brought together inter-disciplinary experts to engage in a range of research activities: (i) a review of literature on the effectiveness of behavioural, environmental, social and systems interventions for influencing COVID-19 outcomes, (ii) a qualitative study on perceptions of the pandemic, and (iii) a survey of perceptions and responses to the pandemic.
- We found that socioeconomic differences in terms of perceptions and responses, as well as, access to information and media use. The negative economic and educational impacts of the pandemic were felt stronger by low- and middle-income groups, whereas high-income individuals more frequently reported the psychosocial impacts of the pandemic.
- Taking into consideration these findings, this report applies a behavioural science approach to the COV-ID-19 pandemic in South Africa, using the Behaviour Change Wheel. This includes the application of APEASE criteria to assess the process of developing, selecting, and implementing interventions: Acceptability, Practicability, Effectiveness, Affordability, Side-effects, and Equity. This behavioural science approach provides guidance on the selection of target behaviours, recognises individuals' capability, motivation and opportunity to enact these behaviours, and outlines intervention types as well as the policy options required to support these interventions.

- The following recommendations are made for future work in South Africa:
  - enhancing communication, including at community level, as well as, efforts to improve scientific and health literacy through science communication;
  - facilitating and supporting the ongoing collection and collation and social and behavioural data from a range of environments; and
  - understanding the perspective of the 'community' in applying behaviour change.
- This systematic approach is important for the challenging process of developing behaviour change interventions to mitigate the spread of COVID-19 and other emerging disease.
- The APEASE criteria can be applied to any part of the process to ensure that:
  - interventions address the behaviours that are most likely to achieve policy objectives;
  - it is clear what it is about people or their environment that needs to change for the behaviour(s) to change;
  - the full range of intervention types are canvassed and selected; thought is given to the choice of policy options for delivering the intervention; and
  - the specific content and delivery of interventions is fit for purpose using appropriate Behaviour Change Techniques.

# Introduction

The COVID-19 pandemic presented an unprecedented challenge which required citizens to drastically change behaviour to curb the spread of the disease. The South African government, aligning with the World Health Organisation, instituted policies that promoted the use of behavioural, environmental, social and systems interventions such as mask wearing and social distancing measures to curb the spread of the virus ((1) (2). Understanding the experiences of the public with these measures is vital in understanding their compliance with the measures as the global social and economic consequences of the pandemic have been devastating. Many individuals lost their livelihoods and the pandemic itself caused psychological stress to individuals, resulting in mental health problems (3). Research on the effectiveness of infection control interventions and the impact of these behavioural, environmental, social and systems level interventions, remains integral not only for the current pandemic, but for forecasted future pandemics, as well as for use in addressing other global challenges requiring multilevel interventions such as climate change (4).

The Department of Science and Innovation (DSI) recognised the contribution of the humanities and social sciences (HSS) to our understanding of the COVID-19 pandemic, particularly in terms of public discourse, research strategy, and policy responses. HSS are especially well placed to investigate the behavioural and social dynamics related to the pandemic, and the psychological impacts of the pandemic. Furthermore, HSS assists by positioning these within the context of a wide range of social and economic challenges in South Africa, such as political instability, food insecurity, health disparities, and other inequities. In response to the DSI's recognition of HSS in pandemic responsiveness, the COVID-19 Behaviour Change Think Tank was established, hosted by the DSI-NRF Centre of Excellence in Human Development at the University of the Witwatersrand. **The intention of this Think Tank was to bring together inter-disciplinary experts who could assist with mixed methods research on behaviour change relating to COVID-19**, **and produce recommendations to guide research, policy, and practice.**  The COVID-19 Behaviour Change Think Tank engaged in three research activities:

- 1. A systematic review of the global academic literature on the effectiveness of behavioural, environmental, social and systems interventions for influencing COVID-19 outcomes.
- 2. An in-depth, qualitative investigation of South African adults' perceptions of the COVID-19 pandemic.
- 3. A large-scale, cross-sectional survey of South African adults' perceptions and behavioural responses towards the COVID-19 pandemic.

A summary of the findings of these research activities are presented in the figures and tables that follow.



#### Table 1: Qualitative summary

Theme	Summary
<ol> <li>General perceptions of the pandemic and preventative measures</li> </ol>	There were mixed views regarding the authenticity of the pandemic. Some trusted its authenticity, and some questioned the authenticity of the pandemic.
2. Economic and employment impacts of the pandemic	High impact on the finances on the low- and middle-income earners was reported. Middle income earners who had previously been shielded from economic uncertainty received little relief from government. While high income earners remained sheltered.
3. Education impacts of the economic	High-income learners moved to online education, while low-income children were un- able to attend school and lost more than a year of education because of the pandemic.
4. Family and social issues	A separation of families was reported as individuals working in different cities from their families were unable to go home during lockdowns. Some were unable to bury loved ones; senior members of society were isolated from families.
5. Emotional, social, and psy- chological impacts of the pandemic	High-income earners reported loneliness and isolation as a result of social distancing measures. High-income earners reported increased anxiety related to the loss of con- trol that stemmed from following government restrictions. Low- and middle-income earners reported increased anxiety as a result of increased economic challenges.

#### Figure 1: Systematic review summary

Figure 2: Survey summary

Theme	Summary
6. Media and the pandemic	Social media information was said to be easily accessible and easy to spread, as it of- ten just came to you without effort (e.g., forwarded WhatsApp messages). Participants highlighted the fear that was propagated via social media and the lack of understand- ing that individuals had about the information they were spreading.
7. Government handling of the pandemic	Most participants appreciated the 'family meetings' initially held by the South African President. Of great concern was the government's lack of response to misinformation on social media, neither did they make adequate use of these tools to disseminate ac- curate information.
8. Healthcare and other gov- ernment systems	The government systems were viewed to have been ailing before the pandemic and hence, did not cope during the pandemic. Participants highlighted how healthcare in- frastructure and systems in place were inadequate to cope with the pandemic.
9. Vaccination	Participants appreciated how government had made the vaccine free for all. The vac- cine rollout and information on measures were said to have been well advertised in ur- ban areas, with individuals stating that the messaging system and adverts had worked extremely well. However, concerns were raised around the accessibility of the vaccine especially for those in the rural areas and those who had demanding jobs, and the lack of understanding of scientific information.
10. Solutions for COVID-19 and future pandemics	Participants highlighted the need for intensive education programs in communities. The need for improved communication and for government to deal with corruption was emphasized.

#### Figure 3: Overall summary of COVID-19 and behaviour change in South Africa



# **Application of behavioural science to the COVID-19 pandemic**

### What is behavioural science?

Figure 4: Behaviour Change Wheel

Behavioural science aims to understand human behaviour, and the development of effective interventions to influence behaviour. Behaviour change interventions include a range of policies, activities, programmes, and services. It is critical to understand the context of interventions since contextual factors can influence intervention effectiveness. While behavioural science has been applied to various health behaviours, such as promoting physical activity and healthy eating, it has relevance for pandemics, such as COVID-19, since mitigating the risks of pandemics relies on people to behave in particular ways, e.g., wearing masks, isolating when sick.

The Behaviour Change Wheel (BCW, <u>www.behaviourchangewheel.com</u>) is an approach used within the field of behavioural science. It is based on the best available evidence of behavioural science frameworks and provides a flexible way in which interventions can be developed, adapted, or selected.



#### Table 2: Behaviour selection

Processes involved in developing an effective behaviour change policy intervention:				
1	Behaviour selection: which behaviours to focus on to meet policy objectives.			
2	<ul> <li>COM-B diagnosis (inner green circle in the BCW): which of Capability, Opportunity, and Motivation to target to change behaviour.</li> <li>Capability is having the physical and mental ability to engage in a behaviour.</li> <li>Opportunity is being in a social and physical environment that is supportive of a behaviour.</li> <li>Motivation is being more motivated to engage in a behaviour, compared to other behaviours.</li> </ul>			
3	Selection of intervention types (middle red ring of BCW): which will most effectively change the behaviour?			
4	Formulating an implementation strategy (outer grey ring of the BCW): identify policy options that will best deliver the intervention type.			
5	Constructing the intervention: specify content and delivery of intervention.			

### **APEASE criteria**

Based on the BCW, these criteria can be applied to assess the process of developing, selecting, and implementing interventions:

#### Table 3: APEASE criteria

APEASE criteria	
Acceptability	How far is it acceptable to key stakeholders? This includes the target group, potential funders, prac- titioners delivering the interventions and relevant community and commercial groups.
Practicability	Can it be implemented at scale in the intended context, with available material and human resourc- es? What would need to be done to ensure that the resources and personnel were in place, and is the intervention sustainable?
Effectiveness	How effective is it (likely to be) in achieving the policy objective(s)? How far will it reach the intended target group and how large an effect will it have on those who are reached?
Affordability	How far can it be afforded when delivered at the scale intended? Can the necessary budget be found for it? Will it provide a good return on investment?
Side-effects	What extraneous adverse (or beneficial) outcomes might it lead to? How important are they and what is the likelihood that they will occur?
Equity	How far will it, or is it likely to, increase or decrease differences between advantaged and disadvan- taged sectors of society?

# Applying behavioural science to the COVID-19 pandemic in South Africa

### Behaviour selection: which behaviours should we focus on?

In the context of COVID-19 the targeted behaviours are social distancing, mask wearing, stay at home policies, and other related government measures. In relation to these forementioned government measures the target may be to stop or start a behaviour, increase, or decrease its frequency, duration and/or intensity, or change its form e.g., to start wearing a mask in public. The behaviour should be defined precisely in its context – e.g., citizens need to start wearing masks, when? -, and for how long? The place, duration, situation, and change required needs to be clearly stated e.g., Citizens need to where masks when they are in enclosed public spaces, citizens are not to take off their masks at any time in this enclosed public space.

# Making a COM-B diagnosis: how should we target the behaviour change? Capability, Opportunity, and Motivation

Having decided that we want to change the behaviour of the citizens e.g., in relation to practising social distancing, we need to consider how this can be achieved. To determine the best approach to dealing with this behavioural problem we use the COM-B diagnosis. This involves identifying the attributes of the target population or their environment that we need to focus on to achieve behaviour change.

The COM-B model (Figure 5) recognises that for any behaviour to be enacted people must have the capability, and the opportunity, and they must be more motivated to do that behaviour than anything else that is in competition with it. Thus, achieving behaviour change can be thought of as like opening a COMBination lock: all relevant enablers need to be in place. If just one of these is not in place, then the desired change will not occur.

#### Figure 5 COM-B model



As shown in Figure 5, capability, opportunity, motivation, and behaviour influence each other. For example, making something easier by increasing capability or opportunity can increase motivation to do it. Motivating people to try a behaviour can increase their capability.

Making a COM-B diagnosis involves trying to ensure that South African citizens possess all 3 of Capability, Opportunity and Motivation supporting the behaviour change. The following questions can be used as a starting point for this. Where the answers to the questions are 'no', 'to a limited degree' or 'don't know', this provides a basis for deciding what needs to change to achieve the behaviour. The process for answering these questions can take many different forms, including surveys, observation of behaviour, discussion groups and interviews. The following questions should be asked. We will use the example of social distancing.

#### Capability

- 1. Do citizens know what social distancing is?
- 2. Are they physically capable of social distancing (across all socioeconomic groups)?
- 3. Do they have the mental or physical skills required to practise social distancing?
- 4. Do they understand why it is important for them to social distance and how to do it?
- 5. Do they have the self-control required to social distance and keep doing it if necessary?

#### Opportunity

- 1. Do they have the time, financial or material resources to social distance?
- 2. Do they have the social support required?
- 3. Is it seen as normal in their social environment to social distance?

#### Motivation

- 1. Do they find it genuinely more attractive than competing behaviours?
- 2. Is it an established part of their routine?

From our study we know that capability, opportunity, and motivation among some members of society was a barrier to the application of protective behaviours. E.g., individuals from low-income groups who earned daily wages were more likely not to follow lockdown regulations as this affected their livelihoods, or the fact that some members of society believed that COVID-19 did not affect individuals in their community because of race/financial status therefore had low motivation to adhere to protective behaviours. Hence, to improve adherence to social distancing government would have to address these issues.

# Selection of intervention types: what will most effectively change the behaviour?

Now having a clear idea of the factors underpinning the behaviour, it is possible to identify the types of intervention that are likely to be effective. The BCW identifies 9 broad types of interventions that can be used. Each of these targets' particular mixtures of capability, opportunity and/or motivation to engage in the behaviour. These are listed in Table 4.

Intervention types	
Education	Increasing knowledge and understanding by informing, explaining, showing, and pro- viding feedback.
Persuasion	Using words and images to change the way people feel about a behaviour to make it more or less attractive
Incentivisation	Changing the attractiveness of a behaviour by creating the expectation of a desired outcome or avoidance of an undesired one.
Coercion	Changing the attractiveness of a behaviour by creating the expectation of an unde- sired outcome or denial of a desired one.
Training	Increasing the skills needed for a behaviour by repeated practice and feedback.
Restriction	Constraining performance of a behaviour by setting rules.
Environmental restructuring	Constraining or promoting behaviour by shaping the physical or social environment.
Modelling	Showing examples of the behaviour for people to imitate.
Enablement	Providing support to improve ability to change in a variety of ways not covered by oth- er intervention types.

#### Table 4: Intervention types

Some intervention types are better suited to some COM-B targets than others, and interventions do not necessarily cover all eventualities but can be used to give an initial idea. For example:

**Education** can be an important starting point for ensuring that people understand why mask wearing or vaccination is important e.g., as the lack of scientific information was an impediment to vaccination, campaigns aimed at increasing scientific information on vaccination may be of benefit.

**Persuasion, incentivisation, and coercion** could be used to motivate some citizens to vaccinate. This was done by government when they gave incentives to the elderly to vaccinate. However, the results from our studies show that to be effective all age groups should be incentivised and this would possibly increase vaccination rates. Only incentivising the elderly raised suspicions among individuals.

**Training** may help to improve health care workers understanding of vaccination. Our study highlighted that health care workers were influential members of society and vaccine hesitancy among them was linked to vaccine hesitancy in their communities. During pandemics, training, and consultation of healthcare workers to increase their knowledge and understanding of vaccines may be beneficial.

**Restriction** could involve not allowing unvaccinated individuals/unmasked individuals into public events such as soccer matches. As reported in our study the fact that those who vaccinated had the same restrictions as the unvaccinated, was a demotivator.

**Environmental restructuring** could involve the introduction of a display ban that would reduce the opportunity for unmasked individuals to enter specific venues. This was done effectively by supermarkets who displayed social distancing signs on the floors of supermarkets, giving individuals direction on where to stand.

**Modelling** could be used to create a social environment through outreach and use of local networks to increase the social norms around mask wearing in public. Our study highlighted the need for citizens to see public figures vaccinate to increase confidence in vaccination.

**Enablement** since government trust is low this might involve providing religious leaders, healthcare workers, community leaders and other trusted sources with material resources so that they can equip their members with the motivation, skills, and opportunity to vaccinate or wear masks.

# Formulating an implementation strategy: what policy options will best deliver the intervention type?

The next step would be to choose the right policy. Many evidence-based policy recommendations fail to deliver on their policy objectives because the wrong approach has been adopted to deliver the type of intervention. For example, when a behaviour is deemed damaging to society and coercion is believed to be an important way to reduce the behaviour, there can be a tendency to jump to use of legislation and the criminal justice system. However, this may be impracticable or even counterproductive e.g., the arrest of some individuals for not adhering to lockdowns, for some mirrored the draconian measures of the apartheid era, therefore negatively impacting the perception of the pandemic among some citizens. Similarly, the restrictions on alcohol and cigarettes during the early phase of the pandemic, for some heightened negative perceptions of the pandemic. Conversely, when seeking to increase the frequency of a behaviour (such as vaccination) through reward, it can seem attractive to use incentives to achieve this; but this may not be the most effective way to do it and may lead to 'gaming' of the system or as reported causing some viewing the incentives as bribery. The BCW provides policy makers with a menu of options to consider when designing the implementation strategy. There are 7 broad options for policies identified in the BCW. These are shown in Table 5.

Policy option	Typically characterised by	Use
Guidelines	The development and dissemi- nation of documents that make evidence-based recommenda- tions for action in response to defined situations	These are most useful when there is a need to educate peo- ple about what needs to be done and why, and there is little or no resistance. Case studies can model good practice.
Environmental and social planning	Architecture, urban and rural planning, object, and location design, and planning for hous- ing, social care, employment, equality, benefits, security, and education	These are a very broad range of policies that affect our mac- ro-environment and how we live our lives, as well as making changes to our 'micro-environment', such as placing of mark- ers in supermarkets to aid social distancing. They are rele- vant when the focus is not so much on changing people but changing the physical and social environment, they inhabit.

#### Table 5: Policy options listed in the BCW

Policy option	Typically characterised by	Use
Communications and marketing	Mass media campaigns, digi- tal marketing campaigns, and correspondence	These policies are most relevant when there is a need to educate people about what to do or why change is impor- tant, or to persuade them of its importance and to trigger action.
Legislation	Use of laws, bylaws, and sim- ilar legislative instruments to set the boundaries for accept- able behaviour with penalties for infringement	These policies are typically reserved for behaviours that are fundamental to security, safety, the wellbeing of society as a whole and the protection of rights. They generally use threat of punishment. Even if they cannot be universally enforced, they can set standards that influence behaviour.
Service provision	Provision of services, materi- als and/or social resource and aids, whether they be struc- tured or ad hoc, financed, or unpaid	These are most relevant when the task is to improve peo- ple's ability to change their behaviour. A major challenge is designing and delivering services that are easy to engage with by all those who could benefit.
Regulation	Development and imple- mentation of rules regarding behaviour that instruct the be- haviour and possibly provide rewards and punishments for conforming	For governmental institutions these policies lie in the space between guidelines and legislation. For groups, communities, and organisations they are one of the key forms of control, creating social norms and using rewards and punishments to shape behaviour of members.
Fiscal measures	Use of taxation, tax relief and financial incentives	The aim here is to incentivise and disincentivise behaviours where there is authority to levy taxes and give monetary rewards or their equivalent. This approach can conflict with the revenue-raising objectives of taxation but sometimes reducing tax rates to encourage a behaviour can result in an overall increase in revenue because of the behaviour change.

## Policy options and intervention types

Choice of policy options will often depend on practical, structural and resource constraints. In South Africa our research highlighted the influence of socio-economic status on access to information, government trust and government experience on government interventions and policy. In turn government trust, government experience and information sufficiency influenced uptake of behavioural measures put in place. We therefore suggest, to optimise the uptake of particular behaviours, that policies be targeted towards a particular socioeconomic group.

Hence, in our context the task for intervention designers is to start with a particular policy option for each socio-economic group. This may entail for example, the development of digital marketing campaigns amongst high income earners with easy access to the internet and digital devices and possibly using door to door campaigns for the low-income groups with limited internet access.

Combining policy options is often the best strategy for a large or complex behaviour change task. For example, in promoting vaccination, a social marketing campaign through television adverts may be used (Communications and Marketing) and its impact amplified by modelling where public figures such as musicians and actors publicise their vaccination.

#### Table 6: Indicative mapping of policy options to intervention types

Indicative mapping of policy options to intervention types							
	Guidelines	Environ- mental and social planning	Commu- nications and marketing	Legislation	Service provision	Regulation	Fiscal measures
Education	X		Х	X	X	Х	
Persuasion	X		Х	Х	Х	Х	
Incentives	X		Х	Х	Х	Х	Х
Coercion	X		Х	Х	Х	Х	Х
Training	Х			Х	Х	Х	Х
Restriction	X			Х		Х	
Environmen- tal restruc- turing	Х	Х		Х		X	X
Modelling			Х		Х		
Enablement	X	X		X	X	Х	Х

#### **Effective implementation of interventions**

Mapping of intervention types to COM-B targets (capability, motivation, and opportunity) and APEASE criteria can provide a broad indication as to the likely effectiveness of interventions. If there is an obvious mismatch, this suggests that the intervention is unlikely to be effective. For example, if it is wrongly assumed that lack of adherence to social distancing is caused by the misinformation around the COVID-19 virus (whereas it's related to lack of government trust or negative past experiences with the government), providing information on the pandemic will not be useful. This kind of mistake can all too easily be made where policy makers do not have access to topic specific expertise or a behavioural scientist who can provide an expert review of the literature. Let us apply the APEASE criteria to the lockdown implemented by the government.

#### Table 7 Application of APEASE criteria to lockdown policy

Application of APEASE criteria to lockdown policy		
Acceptability	How far is it acceptable to key stakeholders? Social distancing as reported by our study is not part of culture and hence difficult behaviours to maintain. It was apparent that adherence to government measures was influenced by government trust and negative past experiences with the government.	
Practicability	Can it be implemented at scale in the intended context, with available material and hu- man resources? Adhering to lockdowns was a challenge in our study with many low-in- come earners reportedly living in crowded areas.	
Effectiveness	How effective is it (likely to be) in achieving the policy objective(s)? How far will it reach the intended target group and how large an effect will it have on those who are reached? As reported by our review lockdowns are effective.	

Application of APEASE criteria to lockdown policy (continued)		
Affordability	How far can it be afforded when delivered at the scale intended? Can the necessary budget be found for it? Will it provide a good return on investment? The study re- vealed that the income grant given was well appreciated by the low-income group who already had job insecurity. However, the economic impact was felt heavily by the mid- dle-income earners who lost businesses and jobs and received little relief.	
Side-effects	What extraneous adverse (or beneficial) outcomes might it lead to? How important are they and what is the likelihood that they will occur? <i>The lockdowns had a devastating impact on the economy.</i>	
Equity	How far will it, or is it likely to, increase or decrease differences between advantaged and disadvantaged sectors of society? The lockdown had a greater negative impact on the lower socio-economic group.	

# **Recommendations for future work**

Having learnt from the current pandemic there are several strategies that can be employed in preparing for future crises:

#### 1. Enhancing communication

- a) Mobilisation of a network of community-based well trained health promotion advocates who can provide context specific and sensitive information to support policy and guidelines. The community-based advocacy can be used in combination with the engagement of mainstream health professionals through media and other channels etc. Community advocacy can possibly be linked to the Community Healthcare Workers (CHW), however as they are already overburdened, we suggest the use of grassroots community-based organization e.g., Health committees in the Western Cape.
- b) Through existing community WhatsApp groups scientists and healthcare professionals can engage communities with an authoritative voice as well as hearing questions and answering questions.
- c) Training of scientists, Department of Health communicators (national, provincial, municipal) and healthcare workers on how to communicate and in understanding of applied behavioural science, as well as providing tools that will enable them to support and promote policy implementation.
- d) Developing a health/science communication vehicle in the media that helps build scientific and health literacy – e.g., the use of storytelling and songs has been evidenced to enhance science communication (Soul City is an example).
- 2. Facilitate and support the ongoing collection and collation of social and behavioural data from a range of social and geographic environments to quickly and efficiently collect data that inform decisions link with the South African Research Infrastructure Network (SAPRN). This is important to understand the baseline information about communities that will inform intervention design and implementation, as well as support the assessment of policy feasibility and acceptability.
- 3. The most important aspect of 'behaviour change" is understanding the perspective of the 'community' in applying the behaviour change. As such listening and understanding the barriers and facilitators for the behaviour is critical. Therefore, we suggest the creation of networks that facilitate stakeholder/community feedback about proposed interventions to promote joint design.

# Conclusions

The development of behaviour changing interventions by government that mitigate the spread of COVID-19 and any other emerging disease is challenging. To maximise the chances of success, it is important to use a systematic approach. This guide explains how the Behaviour Change Wheel (BCW) can inform that approach. It is not a substitute for topic-specific expertise, but rather a way to harness that expertise, where it exists. The BCW can be used in many ways, whether it be developing interventions from scratch, adapting existing interventions, or choosing between a number that are on offer.

The APEASE evaluation criteria (Acceptability, Practicability, Effectiveness, Affordability, Side-effects, Equity) can be applied to any part of the process to ensure that:

- Interventions address the behaviours that are most likely to achieve the policy objectives
- It is clear what it is about people or their environment (Capability, Opportunity, Motivation) that needs to change for the behaviour(s) to change
- The full range of intervention types (Education, Persuasion, Incentivisation, Coercion, Training, Restriction, Environmental Restructuring, Modelling, Enablement) are canvassed and selected based on the COM-B diagnosis
- Thought is given to the choice of policy options for delivering the intervention (Guidelines, Environmental and Social Planning, Communications and Marketing, Regulation, Service Provision, Legislation, Fiscal Measures)
- The specific content and delivery of interventions is fit for purpose using appropriate Behaviour Change Techniques (BCTs).

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