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REACT-2 5b

Qualitative research amongst those who have taken a lateral flow immunoassay test

Ipsos MORI

Contents

Authors and acknowledgements

The authors of this report are Isabella Pereira, Polly Hollings, Tamara Ansons, Tom Cooper and Catriona Millar, all researchers at Ipsos MORI.

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1 Executive summary

As part of REACT2 Study 5b, Ipsos MORI conducted 40 follow-up in-depth behavioural interviews with members of the public in England who had completed an antibody test and who gave consent to further follow-up work. Participants had also completed a follow-up quantitative survey after taking the antibody test that assessed the impact of the test outcome on reported behaviours. The interviews took place between 17th August and 10th September 2020.

Antibody tests and behaviour change

At the point this research was conducted **it was found that antibody test results had a small but varied impact on the behaviours reported by participants.**

While those who tested positive typically felt that the presence of antibodies gave them some level of protection against contracting the virus again, only a few reported actually changing behaviour, with some reporting being more cautious and others being more relaxed:

- In response to a **positive** test result,
    - In some instances participants became more cautious in their behaviour due to taking the virus more seriously or fearing being contagious and spreading it to family.
    - Other participants with positive results reported relaxing their behaviour in the period after taking the test. However, they were not able to determine if the test was the cause and their behaviour change was marginal.
- In response to a **negative** test result,
    - Participants felt more confident about how they were living their life during the pandemic; a negative test result confirmed that they should continue as they had been prior to taking the antibody test.
- In response to an **invalid** result
    - Participants considered an invalid test results as a 'non-result', as it did not tell them anything about whether they had antibodies or not, and by extension had previously had SARS-CoV-2 or not.

Despite limited effect on actual behaviour change, the test results strongly influenced participant's perception of personal risk of SARS-CoV-2 in the context of their own individual circumstances and recent experiences of the pandemic. Across the research, the test typically influenced three aspects of perceived risk:

Susceptibility to contracting SARS-CoV-2.

Those who tested positive typically felt that the presence of antibodies gave them some level of protection against contracting the virus again. The degree of perceived protection afforded by the presence of antibodies was influenced by an individuals' scientific understanding of the test result. This was varied. For example, some conflated their understanding of SARS-CoV-2 antibodies with how immunity for other viruses (e.g. chickenpox) worked. The few participants who reported a change in

behaviour made small changes in line with government guidelines, and in the context of individual circumstances and need.

Those who tested *positive and had expected a negative result* reflected that they must have been exposed to SARS-CoV-2 in the past without realising this. Whilst they had been confident in the measures they had put in place during the pandemic, and noted that they had followed government guidelines, once they had received a positive result they began to wonder whether they had been cautious enough. These participants were concerned that they were currently contagious and they reported putting in place more cautious behaviours than before they had their test result.

Validation/ invalidation of their protective measures

Those who tested *positive and had expected a negative result* were concerned that they were currently contagious and they reported enacting more cautious behaviours than before they had their test result.

Those who tested *negative* felt that the behaviours that they had put in place to manage their personal risk of SARS-CoV-2 had been validated. It is important to note that participants felt that they had been following the government guidelines to minimise their risk of contracting the virus and felt that adhering to these had mitigated their personal risk. These participants planned to continue following the guidelines. In some instances, participants felt that they had taken a more cautious approach than recommended by the government during the pandemic. For example, those with health conditions or living with vulnerable family members reported being cautious about leaving their home even as restrictions were being lifted. Again, they felt that these cautious behaviours had been validated.

Anticipated severity of symptoms they would be likely to experience if they did contract the virus.

Those who tested *positive* reflected on the symptoms that they had experienced when they thought they had had SARS-CoV-2. Many reflected that these had not been serious especially when compared to stories of hospitalisation they had heard of in the press. This led participants to query whether they had experienced a mild form of SARS-CoV-2. They felt reassured that if they were to contract the virus again, they would have similarly mild symptoms or perhaps, even less mild symptoms.

Where participants felt more reassured about their risk of SARS-CoV-2, they described reduced anxiety about the risks of both susceptibility to and severity of the virus for them personally. Whilst participants did not describe actual behaviour changes at the time at which the research took place, it is important to note that this emotional impact may have different outcomes in other contexts (i.e. should messaging about test results or guidelines change).

Perceived susceptibility of contracting SARS-CoV-2 and anticipated severity of symptoms if contracted both played a role in how participants felt about their personal risk of SARS-CoV-2 and the mitigations they reported putting in place to minimise this risk. However, personal risk was only one factor that influenced behaviours. Other factors included personal circumstances, people's experiences during the pandemic, their understanding of the information they received about SARS-CoV-2 and protective measures, their level of concern and sense of responsibility in protecting their family and wider society, wider social influences and their personal values. These factors were influential in combinations which were highly individualised, forming an important context for their perceptions of risk of SARS-CoV-2.

2 Introduction and methodology

The REal-time Assessment of Community Transmission (REACT) programme is a major programme of home testing for COVID-19 to track progress of the infection in the community commissioned by the Department of Health and Social Care. It is being carried out in partnership with Imperial College and Ipsos MORI. REACT-2 sub-programme is the first mass SARS-CoV-2 antibody surveillance study to be rolled out across the country using a finger prick test that can be carried out by individuals at home. Mass surveillance of antibodies in the population is vital to track the extent of past infection across the country and identify differences between different groups of the population.

As part of REACT2 Study 5b, Ipsos MORI conducted 40 follow-up in-depth behavioural interviews with members of the public who had completed an antibody test and who gave consent to further follow-up work. Participants had also completed a follow-up quantitative survey after taking the antibody test that assessed the impact of the test outcome on reported behaviours. The quantitative survey closed the week before the qualitative interviews started.

The interviews took place between 17th August and 10th September 2020. This period coincided with an easing of restrictions by the UK government in England and Wales; on 15th August several types of establishment within the culture, sport, leisure and business sectors were permitted to open. Interviews were therefore taking place at a time of considerable change and adjustment for participants. During the fieldwork period it was also permitted for members of the public to return to their workplace in areas of the country without local lockdowns in place. It is possible that all of these changes may have influenced participants reported attitudes and behaviours during this period.

Research objectives

The aim of the research was to explore the impact of antibody testing on preventive behaviour and adherence to relevant public health guidelines. The key objectives of the project therefore were to explore:

- **How do positive/ negative/ invalid test results influence [reported] individual attitudes and behaviour?**
- How do attitudes and experiences of the pandemic prior to the test influence attitudes towards and decisions to do the home antibody test result?
- How do experiences of the home antibody test itself influence attitudes to the test result?
- How do perceptions of the test/ knowledge of antibodies/ immunity influence attitudes towards result?

In order to fully understand behavioural and attitudinal change amongst participants as a result of the antibody test, interviews sought to cover the following areas:

- Attitudes to and experiences of the pandemic prior to the test: sense of risk, day-to-day reality of life under lockdown, thoughts on government measures and how they fit with their own priorities;
- Reasons for taking the test;
- Experiences of the test itself;
- What they hoped the test result would be and why; and

- Their understanding of what different antibody test outcomes mean, and the implications of the test result for them personally.

How to read this report

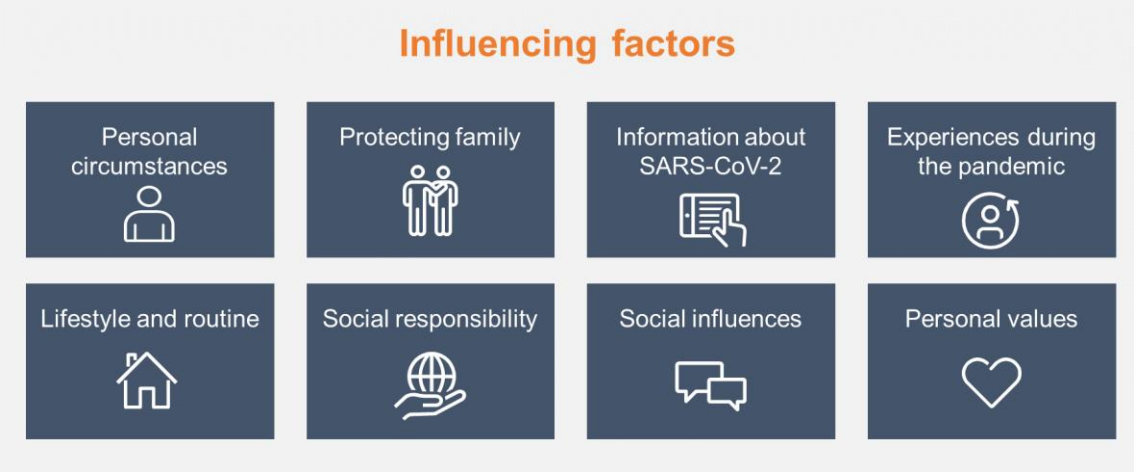
Qualitative research is illustrative, detailed, and exploratory. It offers insight into the perceptions, feelings, and behaviours of people. Owing to the small sample size and the purposive nature with which it was drawn, findings from this research cannot be considered quantifiable conclusions from a statistically representative sample. Evidence in this report is based on participants' perceptions of their own behaviour. It is important to remember that even though some perceptions may not be factually accurate, they represent "the truth" to the participants and as such, are vital in understanding their attitudes and views.

Throughout, we have referred to "participants" and provided evidence through verbatim quotes where these illustrate findings. To protect participant anonymity, quotations have been attributed to key characteristics including gender, age bracket, ethnicity and test result.

Case studies are included to demonstrate individual experiences of the pandemic and the antibody test result reported by participants. Pseudonyms have been used to protect participant anonymity. Where any differences were observed in the data based on demographic profile, these have been reported.

In the course of investigating the key research questions, a considerable contextual data was generated. Common factors emerged when participants in this study described their approach to managing the risks posed by SARS-CoV-2 and how they decided what protective measures to take. These factors - summarised in figure 2.1 below - were interlinked and highly individualised.

Figure 2.1: Factors influencing an individuals' views and behaviours



These factors continued to play a key role in influencing perceptions of risks of contracting the virus and, as such, attitudes and behaviours following the antibody test experience. They are discussed in detail in the Appendix to this report.

Research methodology

Participants in this qualitative research study were sampled from early respondents to a survey questionnaire sent to all those participating in the REACT2 Study 5b antibody tests. All had consented to taking part in follow-up research and were recruited to the research through a further short screener questionnaire delivered by telephone, included in the Appendix to this report.

Given the qualitative nature of this study, we employed a purposive non-probability approach to capture diversity within the target population. Quotas were set on a range of characteristics, notably test results, gender, age and ethnicity – all known to be influential in health outcomes resulting from SARS-CoV-2. Minimum quotas were also set on whether participants identified themselves as 'shielding' from the virus, and on responses to the follow-up survey question about respondent hopes for the test result outcome. [1]These quotas were included to ensure that the study would explore characteristics likely to influence behaviour, particularly in relation to risk / preventive behaviours.

Figure 2.2: Achieved sample quotas in the research study

	Characteristic	Quota	Completed interviews
Test result	Positive ('IgG' or 'IgM')	20	19
	Negative	10	11
	No valid result	10	10
Gender	Male	20	20
	Female	20	20
Age	18-34	10	10
	35-54	10	10
	55-69	10	10
	70+	10	10
Ethnicity	Black Afro-Caribbean	At least 5	5
	Pakistani Bangladeshi	At least 5	5
	Other minority ethnic	At least 5	7
Shielding status	Shielding	At least 8	11
'TESTHOPE' survey response	Positive	At least 5	20
	Negative	At least 5	16

No quotas were set on geographical location, but the following spread of interviews was achieved:

- 20 participants based in the North of England;

[1] Survey question asked to all participants: *Before you took the antibody test, what result were you hoping for? 1. Positive 2. Negative 3. No preference 4. Can't remember*

- 9 participants based in the Midlands and East of England;
- 8 participants based in London; and
- 3 participants based in the South of England (excluding London).

The interviews took place between 17th August and 10th September 2020. Depth interviews lasted one hour and were conducted over the telephone by members of the research team using a structured discussion guide, which drew on a behaviour change framework (see Chapter 6 for details).

All interviews were recorded with consent from the participants and detailed notes taken by researchers following the interviews. Thematic analysis incorporating the use of data summaries was conducted in order to produce timely evidence (Qualitative Research Practice, Lewis, Richie et al, 2013). A thematic framework for the analysis of the data was developed through collaborative discussion among research team members and drawing on the behaviour change framework. This was to make sure a wide range of behavioural influences were accounted for. The framework also included participants' expectations for the test result, with evidence drawn from their survey responses. The analysis framework was used to generate focused evidence summaries to support data analysis. A selection of key interviews was also transcribed and incorporated into data analysis. Analysis was supported by iterative team discussions. The thematic framework for this study is included in the appendix.

3 Receiving a POSITIVE test result

3.1 Behaviour changes

In total, four out of 19 participants who received a positive test result reported a change in behaviour.

Reaction to the test result and subsequent behaviour change was influenced by **what test outcome the participant was hoping for/ expecting** and **what they understood a positive result to mean for them personally** in the context of their individual situation and circumstances.

It is important to note that participants often found it difficult to disentangle the influence of test results on their decision-making with the influence of a general 'pandemic fatigue' and changes to government guidelines.

Two out of the 19 participants who received a positive test result did not believe they had had SARS-CoV-2 until seeing the result and became **more cautious.**

One participant reflected that they had perhaps lapsed on hand-washing behaviours as the pandemic had progressed and reported that they were now taking this more seriously in light of their test result.

"I think I'm taking the whole situation of lockdown and personal … hygiene much more seriously than before … my initial thoughts were that all of this pandemic was exaggerated but it's struck home that it's quite a nasty, contagious pandemic." *(Male, 70+, White, Positive)*

This participant was also concerned that he may be contagious.

The other participant was unsure whether having antibodies meant that she was currently contagious, which had led her to take more precautions at home to avoid the risk of passing SARS-CoV-2 on to her daughter. For example, she was now very careful to avoid drinking from the same glass as her daughter.

"I know it says that I've had COVID, but … would this mean that I could pass on COVID-19 to somebody else? … But this is just the antibody, not COVID-19 at the moment?" *(Female, 35-54, Black Caribbean, Positive)*

For those participants who felt less susceptible to the virus since receiving their antibody test, it is important to note that individual circumstances and experiences continued to play key roles in these behaviours; the test result did not determine participant behaviour in isolation.

Whilst participants felt a sense of 'peace of mind' and reassurance in receiving a positive test result they had continued to practice behaviours they had been following prior to the test and felt validated in doing so. There were a range of reasons cited for continuation of these behaviours based on an individual's circumstances and experiences during the pandemic. For example, one participant with a new-born baby at home felt reassured that his test result may afford him some protection against contracting SARS-CoV-2 again but had not made any changes to his behaviours to keep his family safe.

Two out of the 19 positive appeared to **relax their behaviours** (it is difficult to say exactly what role the antibody test played in this decision – one participant was doing so in order to support her daughter's return to work, so this may have been inevitable). Both participants had started looking after grandchildren since the test and felt more confident in doing so, one of the cases is detailed in Case Study at 3.4.

3.2 Attitudinal and emotional changes

Those who felt they had put in place adequate protective measures before their test result had **hoped for a negative result** and had been extremely surprised at receiving a positive result. The positive test result typically led these participants to query the precautions that they had put in place to manage the risk of contracting and spreading SARS-CoV-2. They were fearful that they remained contagious and could spread the virus.

These participants reported surprise at their positive test result because they had not experienced symptoms and felt that they had been taking adequate measures to protect themselves and their family during the pandemic (e.g. only going out when needed and wearing a mask). Since taking the test participants had thought back to try and determine when they might have shown symptoms or come into contact with someone who had the virus. Lifestyle and routine often emerged as an important factor in participants' surprise at their test result. For example, one participant was retired. They felt that their lifestyle during the pandemic had in itself been a protective measure, noting that they had left the house infrequently and only when essential.

Participants who **hoped for and received a positive test result** tended to feel less susceptible to the virus after their result. They felt reassurance regarding their likelihood to contract SARS-CoV-2 again and or their ability to fight off the virus if they were to contract it again.

Participants were hoping for a positive test result as they believed that they had personally experienced SARS-CoV-2 symptoms or been exposed to those who had. A positive test result gave them the confirmation they had been seeking.

"I think I was quite pleased really because up until then we'd only had symptoms … and I was pretty convinced I'd had it, but it felt like a confirmation, yes I have had it." *(Female, 55-69, White, Positive)*

This confirmation generated feelings of reassurance particularly amongst those who felt that their symptoms had been "mild". Participants compared their symptoms to those they had heard about through the media and were pleased to have experienced much milder symptoms that those reported for example, those requiring hospitalisation. This led some participants to query whether they had experienced a "mild" version of the virus. They anticipated that if they contracted SARS-CoV-2 again, it would be similar to their previous experience and felt confident that their body could cope with the virus as it had before.

"I felt relief to know that I've had it. But I'm still being cautious because I don't know if a second wave will come … I could pick it up a second time. In a mild form." *(Female, 70+, Caribbean/ Asian, Positive)*

3.3 Understanding

Across the research most participants were clear that antibodies did not provide complete immunity to SARS-CoV-2 and they recalled reading this information in the leaflet provided with the test itself. However, there were varied views regarding the role that antibodies could play in the potential to contract the virus again. Some participants felt that although antibodies did not guarantee immunity to SARS-CoV-2, they provided a good level of protection against contracting it again.

"In a strange way I wanted it to be positive, not because maybe I put my family at risk, but because if I've had it, I probably wouldn't have it again" *(Male, 35-54, Bangladeshi, Positive)*

This viewpoint was for some, conflated with an understanding of how participants believed immunity to other viruses worked.

"When you have chickenpox, they say you're very unlikely to get it again … it's that kind of mentality really, oh I've had it and the chances were [that] I won't get it again." *(Female, 55-69, White, Positive)*

Those most wary of the role that antibodies could play included those who also reported reading more widely on the topic. This included participants who were interested in keeping up to date with scientific developments regarding the virus. For example, one participant worked in the NHS and took a keen interest investigating into research relating to SARS-CoV-2 and discussing this with colleagues.

"That's more a positive outcome of the test… when I researched it myself it says that [the protection can be] longer-lasting … I've asked certain doctors … if they've any more information about it … and it's all a bit up in the air now." *(Female, 18-35, White, Positive)*

These participants were also most likely to mention the terms 'IgG' or 'IgM' when discussing their result. Others used the term 'longer lasting antibodies' when describing an IgG result. However, many did not make this distinction, simply noting that they had a 'positive' test result.

Where participants were wary of the role that antibodies could play, they felt most comfortable maintaining existing behaviours.

"The body's had COVID at some point, fought back against it, and there's antibodies currently within the body which could possibly fight off the infection if I do happen to come across it again, hopefully … but how long that lasts is unknown at the moment so I'm still taking every precaution possible really, to make sure that I don't get COVID again." *(Female, 18-35, White, Positive)*

It is important to note that there we also a small number of participants who reported a belief that a positive result meant that were still contagious, which made them more anxious and led them to take even greater care in following guidelines.

3.4 Case Study

Case study: Evelyn, positive test result

Evelyn is in her late 50s and works in healthcare as an administrator at a hospital trust in one of the UK's largest cities. She lives with her husband, adult son and father-in-law, who is recovering from cancer.

Steps taken to mitigate the risk of SARS-CoV-2

As a woman of Black Caribbean heritage and working in the health sector, Evelyn understands herself to be at high risk. At an early stage in the pandemic, she requested of her workplace that she did not return out of concern for her father-in-law, who was shielding. At an early stage in the pandemic, two close relatives had been hospitalised and she was acutely aware of the gravity of the situation. She followed government guidelines strictly, taking care to wash her hands regularly and wearing a mask in public places before it before this was a legal requirement.

"It was really, really scary … a frightening time for everyone"

At the start of her pandemic, her husband was seriously ill and isolated within the home. The family suspected that he had SARS-CoV-2, and in time both Evelyn and her son caught the virus. Both had mild symptoms, and Evelyn lost her sense of taste, which (retrospectively) led her to believe that the family had contracted the virus, although no-one in the family had had a swab test at the time. She worried that she may have brought the virus into their home.

"It may have been me that passed it on to my husband … we didn't have PPE; we weren't allowed to wear a mask"

Reaction to a positive test result

Evelyn was relieved to have a positive test result. This was not only because it offered a confirmation to her that the family had indeed lived through contracting SARS-CoV-2 and survived, but also because she believed that the antibodies would offer protection, even if only temporarily. This was important to her because she had returned to work, and although no longer in a public-facing role, she had been anxious about being in her workplace. The antibody test result made her feel less worried.

"Knowing I have the antibodies; I feel more settled … I feel that if I come into contact with the virus it might protect me … I won't get 'full-blown' COVID … the antibodies will fight it off."

Before the pandemic began, Evelyn had been accustomed to looking after her granddaughter regularly once a week to support her daughter in being able to work. This was something she also enjoyed doing, which was very important to her and supported other family members. As her daughter returned to work, Evelyn's granddaughter also returned to nursery, which Evelyn noted presented a risk to her personally in terms of increasing the risk of infection if she spent time with her. Nonetheless, Evelyn's antibody test result made her feel more confident in returning to this caring role, and she felt less anxious about running this risk.

"I'm taking a risk because she still goes to nursery … but it's been four weeks now and [the result] has made me feel that I can carry on looking after him"

4 Receiving a Negative test result

4.1 Behaviour changes

None of the 11 participants who received a negative test result reported a change in behaviour.

Where there was agreement between participants' **expectation in receiving a negative result** and the result itself, participants became further entrenched in the routines they were already following.

"At one point I thought maybe I was being overcautious, but the test just confirmed that I was keeping myself safe. It made me think why would I risk going out more when I honestly don't need to? I'll just keep doing what I've been doing" *(Female, 35-54, White, Negative)*

As the test confirmed what participants already believed to be the case, they felt more confident about how they were living their life during the pandemic; a negative test result confirmed that they should continue as they had been prior to taking the antibody test. For one participant, a retired nurse who now volunteered in a hospital, the negative result meant that she was able to carry on going into the hospital. She felt that had her result been positive, she would have been unable to continue volunteering. For another participant, an office worker in her thirties who suffered from severe asthma, the negative result told her she had been doing a good job of keeping herself safe so should not change her behaviour.

Similarly, no participants who **expected a positive result but received a negative result** reported any behaviour change. Whilst there were a range of emotional responses to receiving a negative test result when expecting or hoping for a positive result, participants all believed they would continue to follow the steps they had been taking prior to taking the antibody test.

4.2 Attitudinal and emotional changes

For participants who hoped for a negative result and then received one, their result validated existing behaviours and attitudes. The protective measures that they had adopted at the start of the pandemic were confirmed as effective by the fact that they had not contracted the virus at any point – which was what they understood a negative result to mean.

"The test confirmed we have been doing everything right" *(Male, 35-54, White, Negative)*

Participants hoped for a negative result as they had not experienced any suspected SARS-CoV-2 symptoms, nor behaved in a way that they believed would have put them at risk of contracting the virus. These participants were confident in how effective the steps they'd taken to protect themselves were. They believed they had stuck closely to government guidelines, and at no point had felt unable to follow the rules. One participant was so certain that they had not done anything to result in them contracting the virus, that had their result been positive they noted that they would have assumed the test was faulty and taken another test before they believed the result. Participants who had expected a negative result were all unsurprised when they received one and did not feel any differently about their susceptibility to the virus.

"I did not feel anything about the result really, it was a bit of a non-event – it just confirmed what I thought it would be. I almost 100% knew it would be negative, so really it was an anti-climax." *(Female, 35-54, White, Negative)*

Individual circumstances could make a negative result a cause for disappointment. Participants who had experienced what they believed could be symptoms of SARS-CoV-2 were hoping that the antibody test would confirm that this was the case. When the symptoms experienced were felt to be relatively mild the desire to confirm that they were SARS-CoV-2 was intensified. Participants believed that if their symptoms had been mild the first time around, then they would be similar, or perhaps even milder if they were to contract the virus again.

"If the test told me that what I'd had was in fact COVID, it would have been a relief, as the symptoms were basically not that bad...I didn't need to go to hospital or anything like that" *(Female, 35-54, White, Negative)*

When participants had a heightened sense of risk, most frequently as a result of underlying health conditions, then the sense of disappointment that suspected symptoms were not SARS-CoV-2 was even more acute. A positive result would have given them peace of mind, as they had already experienced what the symptoms were, and they were ultimately not that bad.

"The negative result was really disappointing, it meant I could still get really ill and need a ventilator... When you see people on the news on ventilators it puts the fear of God into me" *(Male, 55-69, White, Negative)*

Lastly, there were participants who received a negative result who felt relieved by their result. This again was a result of individual circumstances and experiences playing a key role in influencing views and behaviours regarding the risk of SARS-CoV-2. They felt relief as the result confirmed to them that they could not have been contagious or passed the infection on to wider family members. For one participant who lived in a multi-generational household this was relief was especially pronounced.

"We are an extended family, not a nuclear family. I am in close regular contact with maybe 4 or 5 families, so I was worried that the virus would spread very quickly amongst everyone. So a negative result means at least I would not be passing anything on to them" *(Male, 55-69, Pakistani, Negative)*

4.3 Understanding

All participants understood that a negative result meant that they had not had SARS-CoV-2. Those who expected a negative result did so because they did not think they had had any symptoms.

Although across the research participants were clear that antibodies did not provide complete immunity, there was still a belief that a positive test result would give participants some degree of immunity from reinfection. Those participants who hoped for a positive result but received a negative result felt more susceptible to the virus than they would have if they received a positive result.

"My second antibody test was negative which was annoying as it meant now I could get the virus again" *(Male, 55-69, White, Negative)*

Participants also understood a negative result to mean that they could not have spread the virus at all in the past. For those who were worried that they might have previously spread the virus to friends and family, a negative result assuaged fears that they could have infected others.

"No-one wants to have a positive result, because the effect is that you could have passed it on." *(Female, 35-54, White and Black Caribbean, Negative)*

4.4 Case Study

Case study: Natalie, negative test result

Natalie is in her mid-thirties and works for her family business in Essex. She lives alone and due to severe asthma took the decision to shield.

Steps taken to mitigate the risk of SARS-CoV-2

Natalie has had asthma all her life, but it was only 8 months ago that it became potentially life-threatening when she had a major attack that left her hospitalized.

"The asthma just flipped on its head and all of a sudden I'm taking 3 or 4 types of medication every day"

Since then even the smallest cold could be potentially fatal, and three weeks before lockdown another attack again sent her to the hospital. Natalie feels highly at risk from SARS-CoV-2 and suspects that much like her asthma attacks, the virus could be life-threatening. Therefore, she decided in March to effectively shield herself, although not officially in one of groups deemed at greatest risk.

"Since March I haven't gone further than the end of the drive"

Before Natalie worked for the family business, she was a police officer. She believes this background makes her over-cautious and more aware of risks. That said, she also did not find self-isolating difficult.

"I'm the sort of person that just gets on with things by myself. I'm actually really enjoying the isolation"

Reaction to a negative test result

Natalie had no doubt that she was doing enough to keep herself safe but wanted confirmation that this was definitely the case.

"I would have been completely stumped about where I got it from if it was positive"

Her negative test outcome therefore came as no surprise. To her mind, it confirmed that she was doing the right thing. As a result, she believed that she should carry on as she had been doing in order to stay safe.

"I mean I'm doing the safest thing right now, so why would I change that"

Natalie did not feel the need to share her result with any of her family or friends as she did not consider it a significant event, it merely confirmed something she already suspected to be true.

5 Receiving an Invalid test result

None of the 10 participants who received an invalid test result reported a change in behaviour.

5.1 Behaviour changes

An invalid test had very little impact on participants and did not influence confidence in personal risk of contracting or spreading SARS-CoV-2 or the steps taken to mitigate this risk.

Participants considered an invalid test results as a 'non-result', as it did not tell them anything about whether they had antibodies or not, and by extension had previously had SARS-CoV-2 or not. The test result therefore did not impact on their behaviour; they reported following the same precautions as they had been prior to taking the antibody test.

5.2 Attitudinal and emotional changes

Disappointment was the most common reaction to an invalid result, as participants had hoped for a definitive result.

"I felt disappointed with my result, I just wanted an answer … It didn't show anything one way or the other" *(Female, 55-69, White, Invalid)*

Those who had hoped for a negative result expressed disappointment that the test could not confirm that their current behaviours were proving effective at keeping them safe. For example, one participant for example had started self-isolating from late February and had only been out of her home once; she sought confirmation that her caution was warranted.

"I hoped for negative because I've done everything I need to do" *(Female, 18-34, Pakistani, Invalid)*

Another participant expressed both disappointment and frustration with an invalid result. They had hoped for a negative result to confirm that there was no chance they could have spread the virus amongst wider family members, who they had been seeing sporadically over lockdown.

"I was apprehensive before taking the test. I saw my family, including my elderly Mum and dad, quite a lot over the past few months. If I get positive then maybe I might have infected her" *(Male, 18-34, Black African, Invalid)*

Those who had hoped for a positive result were similarly disappointed with an invalid test result. These participants were hoping to confirm suspected symptoms of SARS-CoV-2. For example, one participant who had not been to work for six weeks with suspected symptoms sought confirmation that what he had experienced was SARS-CoV-2.

5.3 Understanding

Participants understood an invalid result to mean that they had not taken the test correctly, or that something to do with the test kit itself had malfunctioned. Either way, their invalid result had no impact on their sense of risk.

6 Behavioural analysis and implications

6.1 Applying a behavioural change framework

A behaviour change framework is a system that draws on different theories of behaviour to help (a) identify and understand the different influences that shape behaviour and (b) through this understanding develop targeted interventions to change behaviours. In exploring the implications of the evidence of this study, we have applied MAPPS, a framework that has 5 dimensions and 11 categories, to identify and understand the influences on behaviour. A full explanation of the derivation of this framework is included in the Appendix to this report.

The 5 dimensions are Motivation, Ability, Processing, Physical, and Social, and the specific categories and their contents are provided in Figure 6.1. below. The MAPPS framework covers a range of influences on behaviour, so provides a holistic lens for identifying and understanding what may be underpinning the behaviours being explored.

Figure 6.1: The MAPPS dimensions and category contents

MAPPS DIMENSION	MAPPS CATEGORY	Contents	WHAT IT MEANS
Motivation	Outcome expectations	How estimation/predictions about outcomes affect motivations	I don't think it will work
	Emotion	How feelings/emotions and emotion regulation can support behaviours	I'm not feeling like doing it
	Internalisation	How behavioural motivation evolves from extrinsic to intrinsic	I don't want to do it
	Identity	How personal and social identities support behaviours	I'm not that kind of person
	Self-efficacy	How feelings of self-efficacy and mastery support change and persistence	I don't feel able to do it
Ability	Capability	How we learn new behaviours	I don't have the skills to do it
	Routines	How behaviours become habits, embedded in routines	It's not part of what I usually do
Processing	Decision forces	How heuristics, biases and behavioural regulation guides decisions and behaviour	How things are processed
Physical	Environmental factors	How the physical environment, context and resources sparks, supports or impairs behaviour change	How things are set up
Social	Social Norms	How group, transient or situational norms guide behaviour	What's expected of us
	Cultural Values	How broad cultural values affect behaviour	The way we live

6.2 Discussion and policy implications

We have applied MAPPS to frame the different influences on behaviour to unpack what was shaping behaviour both before and after taking the test. We have highlighted the key MAPPS categories that have emerged from our analysis and used these to make recommendations for future intervention development. Given the nature of the research it is difficult to detail the precise temporal confluence of these influences; therefore.

A key influence on the desired behaviours is the understanding that people have of the test results and what it means for their situation (Capability). In particular, there were different views of what a positive test meant to participants, which translated into how the test results impacted their subsequent behaviours. Some participants saw the antibodies as providing protection against getting infected again or more seriously and relaxed their adherence to the protective behaviours, whereas others saw the positive test as heightening their concerns, so resulted in greater adherence to protective behaviours. These findings indicate a range of possibly understandings of the test results – especially for those receiving a positive result, so building a clearer understanding of what the results mean and how they should shape subsequent behaviour should be developed. Some guidance on how this could be done is provided below:

- **Ability – Capability**
  - *Understanding:* Provide relevant information in a timely manner.
  - *Feedback:* Provide information about behaviour by providing feedback on what is being performed.

It is also worth considering the implications of the different emotions that were mentioned as these can play an important role in motivating subsequent behaviour given their impact on action tendencies (Elliot, Eder, & Harmon-Jones, 2013). There were a range of emotions mentioned, including curiosity before that influenced getting tested, fear that they could spread the virus after a positive test, anxiety levels that fluctuate across time, and relief after receiving results. When thinking about how these specific emotions may shape behaviour, it is useful to think about the extent to which they support feelings of control / power and valence (positive / negative feeling), to unpack how the emotion translates into behaviour change. For example, some negative emotions like fear can trigger more vigilance (Lerner, Valdesolo, & Kassam, 2015), meaning that experienced and anticipated emotions can impact how processing unfolds (Decision Forces). As such, evoking and managing emotions play an important role in changing behaviour, and some guidance on how this can be done is provided below:

- **Motivation – Emotions:**
  - *Feedback:* Provide ways to bolster or move towards positive emotions and ways to manage these experiences.

- **Processing – Decision Forces**
  - *Feedback:* Providing guidance to interrupt or reinforce the behaviour.
  - *Planning:* Setting of intentions and developing skills to allow a behaviour to be enacted and maintained.

Although our findings did not show substantial behaviour change across our participants, the insights that shed light on the changes to perceptions and emotions, which could reflect initial regulatory changes that later shape behaviour change. Moreover, these perceptions about behaviour not only play a role in how the behaviour is conceptualised, but can also trigger behaviour regulation processes like monitoring or planning that shape subsequent behaviours. As such, there is an opportunity to see the tests not only as a behavioural outcome but also as a possible trigger of behaviour regulation, that may play a role in shaping future behaviour.

Exploring the findings alongside the contextual behaviour factors presented in Appendix 2 it was apparent that across both before and after taking the test, the governmental guidelines (a Physical – Environmental influence) was cited as a key influence that shaped behaviour. However, given the way that these guidelines have been introduced without strict regulatory restrictions, they do not solely

operate based on external influences, but, instead, on how people understand and apply the guidance to their own situation. Indeed, individuals that saw higher perceived personal risk in terms of their susceptibility and severity with SARS-CoV-2 (Outcome Expectations), direct personal experience with SARS-CoV-2 symptoms (Emotion and Decision Forces), practice with protective behaviours (Routines and Identity) or had a strong sense of personal duty or responsibility to protect those close to them (Social norms) all seemed to play a role in shaping how the guidelines shaped behaviour. That is, where people saw greater risks, had direct personal experience, practice with protective behaviours, or strong sense of personal duty or responsibility, there appeared to be a heighted adoption of the protective behaviours.

Hence, some of the ways that governmental guidance can become more readily adopted by individuals is by ensuring their guidelines tap into these different influences on behaviour. Some broad ways that this can be done is by:

- **Motivation – Outcome Expectations:**
  - *Understanding:* Be clear about the risks associated with different behaviours and the possible outcomes of these risks. Provide timely guidance on ways risks can be mitigated.
  - Feedback: Help people see the impact of their actions on risk mitigations.

- **Motivation – Emotions:**
  - *Feedback:* Provide ways to bolster or move towards positive emotions and ways to manage these experiences.

- **Motivation – Identity:**
  - *Understanding:* Conveying how behaviours are linked to a salient identity.
  - *Connect:* Seeing people that share a salient identity enact a behaviour.

- **Capability – Routines:**
  - *Feedback:* Provide guidance on behaviour to correct or maintain it.
  - *Planning:* Developing and maintaining intentions or new skills to support a behaviour.

- **Processing – Decision Forces**
  - *Feedback*: Providing guidance to interrupt or reinforce the behaviour.
  - *Planning:* Setting of intentions and developing skills to allow a behaviour to be enacted and maintained.

- **Social norms:**
  - *Understanding:* Providing ways for social influences to guide learning.
  - *Connect:* Showing how a behaviour represents a group, transient or situational norm.

6.3 Conclusion

Based on the findings of this qualitative study, it is possible to conclude that receiving a test result from an at home lateral flow antibody test did not result in any significant changes to participants' behaviour *at the point in time when this research was conducted*.

Where behaviour changes did take place, these were the result of a combination of contextual factors that influenced the individual's situation, such as family commitments, home life and work alongside the antibody test result and could not be directly attributed to the test result itself. The test result did elicit an emotional response which, for some, determined a change in attitude. This evidence therefore suggests that *some potential for behaviour change on receiving a test result exists.* However, this potential for behaviour change is highly contextualised, being strongly interlinked with participants' understanding of

the test result, their wider personal circumstances and recent experiences of the pandemic, and the nature of government guidance at the time of the interview. In this study, attitudinal shifts alone had not caused changes in participant behaviour at the point when fieldwork was conducted.

As there is no suggestion that at home antibody tests significantly impact individual behaviour we find that it is acceptable to use this type test for large scale SARS-CoV-2 sero-surveillance studies provided certain conditions are met. It is essential that there is good communication from the research team to explain that these tests are not accurate on an individual basis and can only provide information about antibody prevalence at a population level. The study materials should also give participants detailed and appropriate information on the meaning of antibodies, making it clear that it is not yet known whether having antibodies provides any lasting immunity to SARS-CoV-2. It should be explicit in the study materials that based on this information participants should not change their behaviour as a result of the test.

Appendix 1: Experiences of taking the test

Motivations for taking the test

Participants often used the word “curious” when describing their decision to take the test. For those who had experienced symptoms, there was a strong desire to know whether these had been related to SARS-CoV-2. Those who suspected that they had had SARS-CoV-2 sought confirmation that their suspicions had been correct. They were also curious to know if they had antibodies.

Across the research two participants had experienced a family member from their household dying from suspected SARS-CoV-2. Both participants were from a BAME background and lived in the region of London. These participants were keen to take the antibody test to confirm whether they had personally had SARS-CoV-2; they felt that this information would help them understand more about the presence of SARS-CoV-2 in the household and help them determine whether SARS-CoV-2 had played a role in their family members’ death.

Curiosity was also cited by those who had not experienced symptoms but were simply interested to know whether they had had SARS-CoV-2. These participants noted that they were aware that people could be asymptomatic and whilst they did not feel that they had experienced any symptoms, they were curious to take the test.

Across the research participants felt positively towards being able to contribute to the research. They hoped that their participation would support the research and understanding of SARS-CoV-2. This was a particularly motivating factor for those who had previously taken part in research studies, a participant with a family member who had taken part in a drugs trial, and a participant who worked in the NHS.

It is interesting to note that motivations for taking the test did not include a desire to make changes to behaviours as a result of a particular test result.

Process of taking the test

Across the research participants found the test simple and straightforward to take. In some instances, participants asked a family member to help them carry out the test for example, by helping them to prick their finger. Participants recalled reading the instructions provided with the test, and following the steps detailed. They felt that these were easy to follow which led to some participants who received an invalid result to express frustration or disappointment regarding their test result.

The speed and strength of the line development on the test cassette played a role in how some participants interpreted their result. Where the line development was considered by participants to be extremely faint, they were not always sure how conclusive the test result was. In these instances, participants tended to interpret the result in keeping with what they had been expecting. For example, one participant thought that they had experienced SARS-CoV-2 symptoms and therefore decided to interpret the result as positive. Another participant had been expecting a negative result and therefore queried the faint line; this participant showed the testing cassette to family members who interpreted the result as positive, but he remained unsure.

"I wasn't convinced … I didn't really think there was a second line … but other people who were with me when I was taking the test was convinced that there was a second line. We showed the photographs to our children who said yes there is a second line, but I honestly thought it was so faint, it couldn't really count." *(Male, 70+, White, Positive)*

Where the line development was felt to be fast and strong in colour participants queried whether this indicated the strength of antibodies, for example the number of antibodies.

"After 2 minutes that g [IgG] line came up really bold after 2 minutes … and a bit of the m line was highlighted but just slightly. I was kind of pleased, I don't know whether the speed at which the g [IgG] line shows is any indication of how many antibodies you've got but I was pleased really." *(Female, 55-69, White, Positive)*

Participants had expected that the test would be effective. Whilst they recalled the study information detailing that the test was still in its' infancy and there were varied responses to this information. One participant wondered whether this information was more of a '*disclaimer'* that the study was required to include and felt comfortable taking their test result at *'face value'*. Other participants were cautious about the accuracy of the test.

"I was unsure to be honest … I think with COVID being quite new, not a lot of research has been out about it … I didn't really know which way the test was going to go … looking at some of the studies … it's proven to be quite trustworthy at the moment." *(Female, 18-35, White, Positive)*

Across the research participants trusted their test result. The only instances where participants queried a test result was where this result was different to an outcome that they were strongly expecting. This tended to cast doubt in the participants' mind regarding their test result. More widely, participants across the research who similarly felt very strongly about their expected test result noted that they would have queried their result if it had been different to their expectation.

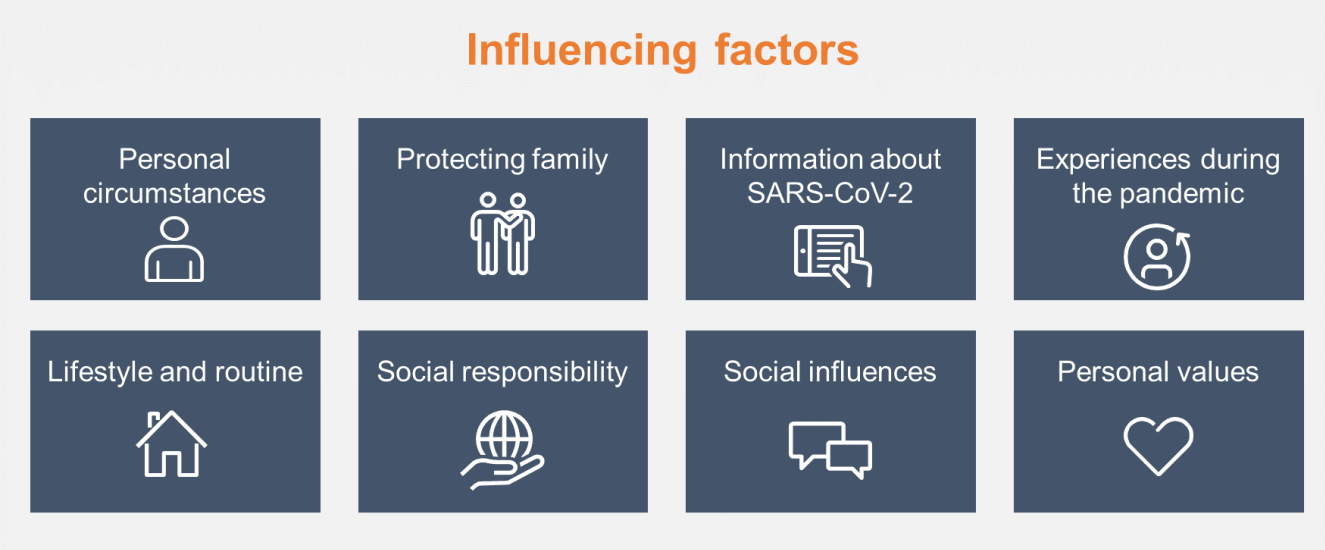
Trust in the test result was also affected by other tests that participants had taken. It should be noted that some participants across the research had subsequently received a further test as part of the REACT-2 study. Where participants had received the same test result this had reinforced their trust in the study result. Participants who were key workers noted that they had taken a SARS-CoV-2 swab test. The result of their antibody test mirrored their virological swab test result which again, reinforced trust in their antibody test result.

Participants across the study had mixed views on who should be given the opportunity to take the antibody test ranging from those who suspected they had experienced SARS-CoV-2 symptoms through to the entire population. They agreed that self-administering the test at home was straightforward but suggested that giving an option to have a healthcare professional help administer it face-to-face could be valuable for some people e.g. those with a visual impairment.

Appendix 2: Contextual behavioural factors

Some common factors emerged when participants in this study described their approach to managing the risks posed by SARS-CoV-2 and how they decided what protective measures to take. These factors - summarised in figure 5.1 below - were interlinked and highly individualised.

Factors influencing an individuals' views and behaviours



These factors continued to play a key role in influencing perceptions of risks of contracting the virus and, as such, attitudes and behaviours following the antibody test experience. Each of these is discussed in turn the remainder of this chapter.

Personal circumstances and perceptions of risk of illness

Fear of contracting SARS-CoV-2 was typical of all participating in the research, although levels of perceived personal risk (in relation to susceptibility and severity of disease) were varied. Those who identified themselves as being in 'high risk' groups such as older participants, black and minority ethnic participants, or those with health conditions tended to be the most anxious about contracting the virus.

There was a particularly strong feeling of vulnerability among older participants, with the understanding that if they contracted the virus "there's a risk that the worst could happen". While some were generally anxious about their health due to their age and underlying health conditions, even those who had previously perceived themselves to be "pretty healthy for our age" were anxious about the risk posed by SARS-CoV-2.

Participants with health conditions also believed that this could put them at a higher risk of experiencing a more severe form of the virus, which worried them. Older people in particular discussed their fears related to existing health conditions, as in the case of one participant who was worried having had a heart attack two years ago would put him more at risk of developing severe symptoms.

BAME participants often spontaneously discussed their understanding that they were at higher levels of risk. They typically reported that they were taking precautions and following relevant guidelines; they also typically reported fears that they would contract the virus. One BAME participant said they were concerned about the emerging research that showed BAME individuals were at more risk in the NHS,

although they also described feeling confused about the extent of the risk as it was unclear why this should be the case.

Lifestyle and routines

Across the research participants' lifestyle and routine influenced both how they felt about putting in place measures to manage the risk of SARS-CoV-2 and how easy or difficult implementing these steps were. Reflecting the enormous diversity of the UK population, this varied widely amongst participants.

Key workers who continued to work through the pandemic noted that their work routine had not drastically changed, providing a prevailing sense of 'normality'. However, they also noted that their job put them more at risk of contracting SARS-CoV-2.

"Obviously I work in a hospital … so I am more prone … but we've got plenty of things in place to prevent that from happening." *(Female, 25-34, White, Positive)*

Those who were or had previously worked in a healthcare setting were familiar with infection control measures and putting in place behaviours to manage risk.

Whilst some were confident in the measures put in place in their workplace, others raised this as a concern. One participant had changed their job during the pandemic to become a delivery driver which was a role he felt had less public contact than his previous job. This change had been important as he had a young family he was keen to protect from the virus. Another participant worked in a warehouse and whilst he noted that many measures had been put in place, he queried how possible to was to keep socially distanced all the time. This was a cause of concern because he lived in a multi-generational family home. These experiences had made these participants even more cautious about following measures when outside of work, to help minimise the risk of SARS-CoV-2.

Those who were retired or who typically spent a lot of time at home prior to the pandemic noted that the pandemic had not had a major impact on where they spent their time. These participants often felt that their lifestyle acted as a protective measure in itself as they spent very little time out of the home and were therefore less likely to come into contact with the virus.

"Because my medical condition restricts what I do anyway, it didn't make a lot of difference to me." *(Female, 55-69, White, Negative)*

Not being able to spend time with family, socialising or going out to pursue hobbies was widely cited as the most difficult aspect of the pandemic, and whilst participants reported high motivation in following guidelines, this was not always easy to do. Where behaviours echoed routines or behaviours that individuals had been practicing prior to the pandemic, guidelines were easier to implement. For example, one participant noted that they were previously very cautious about personal hygiene and germs, and therefore frequent washing of hands and using hand sanitiser was something that she had been doing prior to the pandemic. However, others noted that it was difficult to remembered to adhere to new behaviours. For example, one participant described how he had forgotten to use a facemask in a takeaway restaurant only noting when he saw another customer wearing a mask. While one participant felt they were naturally good at adapting to change, another described feeling the opposite. This latter participant found it difficult not to hug people at community gatherings such as church services, especially during a time where they felt that friends needed support.

"I like to hug people, particularly if haven't seen them… [it's] really difficult to remember not to do that. Having contact and showing love through touching people, that has been really hard not to do [and not to] cuddle them if they are crying or suffering" *(Male, 55-69, Black African, Invalid).*

Protecting family members

Overall, there was widespread evidence of a strong sense of concern, care and social responsibility in response to the pandemic, particularly regarding protecting family members from contracting SARS-CoV-2. Even among participants who felt their personal risk was not high, there was a perception that avoiding contracting the disease personally was important, in order to avoid spreading the virus and endangering family members.

, I think [taking precautions was important to me] just so I didn't catch the virus and so I didn't put my family at risk." *(Female, 55-69, White, Negative)*

This was a particular concern for those living in multigenerational households. One participant in this position expressed anxiety about how easily the virus might spread amongst the family if just one of them contracted virus. Another participant who lived with his older parents and brother, all of whom had health conditions, echoed these concerns. While he didn't perceive himself to be personally high risk, he was still nervous about picking up the virus and infecting his family who he believed were more vulnerable.

"If I was living alone, I wouldn't be that worried." *(Male, 35-54, Pakistani, Positive)*

Protecting family was a key concern among those who perceived their relatives to be at a higher-risk from SARS-CoV-2. Several participants said they had stopped seeing family who they did not live with altogether for this reason. One participant explained that they no longer saw their sister-in-law as she suffered from asthma, which made them particularly worried about infecting her. Another participant described how earlier in lockdown when his wife was pregnant, he took extra care to protect her and his family but taking more risks of infection upon himself.

"When my wife was pregnant, you still try to be, as a household, protective […] I was the only person to go for shopping, with masks and hand sanitizer and everything. My wife, she has not been out for the first 3, 4 months almost." *(Male, 35-54, Pakistani, Positive)*

Another example of a participant being less cautious in order to look after their family was one woman who felt that she had to break the guidelines to go and check on her mother, as she was worried that something had happened to her. She also had to take her children with her, as she had no other childcare option.

For one participant who was a carer for his mother, taking measures to avoid contracting and therefore spread the virus was of the utmost importance. As his mother was very high risk and he was her full-time carer, his main priority was to protect her from contracting SARS-CoV-2. He did not see himself as personally high risk, but for the majority of lockdown he did not see anybody apart from his wife or mother in order to avoid contracting the virus.

Taking clear precautions and demonstrating safe practices also emerged as important in helping to manage anxiety regarding the risk of contracting SARS-CoV-2. One participant described how she had

been careful to protect her parents when she dropped off their shopping, not only to protect them from SARS-CoV-2 but also to help them feel safe.

"My parents, my mum has a lot of health conditions, a heart problem and everything, and it was just ensuring, keeping them safe really, making them feel that when we delivered food and stuff that we kept our distance and things like that. That's been our main concern really." *(Female, 55-69, White, Positive)*

A sense of duty to family members was also cited as a reason for protecting personal health. For example, one participant referenced her role as a mother and how it was important for her to keep herself healthy to be able to look after her daughter. Another participant whose husband had died from suspected SARS-CoV-2 did not want to leave her daughter and grandchildren alone, whilst another spoke of their responsibility towards their parents and being healthy enough to be able to support them.

"I suppose when you've got older parents, you want to be fit and healthy to be there, do things for them, so that would be impacted as well if anything were to happen." *(Female, 55-69, White, Invalid)*

Social responsibility

There was a strong sense of social responsibility among participants when discussing taking precautions against SARS-CoV-2. There was generally a high level of awareness that individual behaviours could affect spread of the virus and impact other people in the community.

"Obviously you don't want to pass it on to anyone else unknowingly." *(Female, 55-69, White, Invalid)*

Among those who felt their personal health risk was fairly low should they contract SARS-CoV-2, there was widespread recognition that people in the community may be at a higher risk, leading to a strong desire not to be a carrier of the virus.

"I see a point in it all, it's obviously a terrible virus, and just because it hasn't affected me so badly, it doesn't mean that it can't affect other people as badly." *(Female, 55-69, White, Positive)*

Participants reflected that it was possible to be asymptomatic and for them this reinforced the importance of following measures to protect other people in the community.

"The thing is, if you don't show the symptoms you can still give it to the people who might be really high-risk, so you have to think about that as well." *(Male, 35-54, Pakistani, Positive)*

There was also evidence of a perception that helping to slow the spread of SARS-CoV-2 was an important contribution to society overall. Participants described following guidelines as doing their "bit", or a way to "help out", and there was a desire to contribute to the national effort to combat the virus by complying with the government regulations.

"It was important to not just think about yourself but about the greater good of the country, especially those who are vulnerable" *(Female, 35-54, White, Negative).*

Participants who were already involved in volunteering or supporting their community often described taking extra care because of this. One participant explained that she had to take additional precautions, as she volunteered with children who had cancer, and was concerned about contracting the virus and passing it on.

There was evidence of frustration among participants at environmental factors which made it difficult to follow guidelines fully: for example, people in public getting too close and not allowing others to social distance, or not being able to fully socially distance in the workplace. This concern was even more pronounced for those participants who had close contact with SARS-CoV-2 patients.

I think some days I was a bit angry with it really … I suppose because I work in the NHS… some days I would go to work and I'd come home and where I live there's people just out on the beach who weren't social distancing and I'd been at work all day, hot, wearing PPE trying to protect myself and the patients … so that made me quite angry." *(Female, 18-34, White, Positive)*

Information about SARS-CoV-2

Information about SARS-CoV-2 and the pandemic (typically from mainstream media sources such as TV news channels and government briefings) strongly impacted people's emotions and behaviours in relation to taking protective measures. Some participants felt that they had not appreciated the severity of the risks associated with SARS-CoV-2 at the beginning of the pandemic but had become more anxious about the threat as they learned how dangerous it could be. For example, one participant described initially believing that if *"you can't see the problem… you think 'if you're careful why can't you go out?'"*. He explained that it took a while for him to mentally process and absorb the threat of the virus, as it's not something he's ever experienced before. However, as he found out more information he came to understand the gravity of the situation.

"Then you start to hear the sadness of people dying and then it hits you that, if you don't do these things, you'll probably get the virus and the reality kicks in" *(Female, 35-54, Chinese, Invalid).*

Conversely, some participants described becoming generally **less anxious** about the virus over time, with some putting this down to general fatigue and the difficulty of maintaining strict precautionary measures over time. One participant explained that after not knowing anybody who has had the virus for a while you can get a sense that "*the virus isn't close by*". In particular, the long-term strain of not seeing close friends and family led some to revaluate their approach to managing risk.

"After you've not seen your family for 5 months you think, well, small risks are perhaps worth taking" *(Male, 70+, White, Negative)*

Participants also adjusted their perception of risk in line with new information about SARS-CoV-2 and its prevalence, as well as changes to government regulations. One participant noted that he had relaxed his precautionary measures because of the "generally lower rate of infection", while another cited the "emerging evidence available and changing practices".

There was also evidence that guidance was difficult for members of the public to understand. One parent noted his confusion around sending his children to nursery at the start of the pandemic. His wife was pregnant at the time, but he could find no guidance on whether he should send his child to nursery, reporting that the nursery told him "it's up to you". This same participant was also concerned about his child now re-starting nursery, feeling he lacked information on the relevant practicalities and risks to families: *"children can't social distance"* (Male, 18-34, Pakistani, Positive). His worries were underpinned by concerns about his father-in-law, who was in a high-risk category. Others felt there had been "mixed messages" as the guidelines kept changing.

Experiences during the pandemic

Another common influencing factor that emerged was the role of formative experiences of the pandemic in how people conceptualised the risk of SARS-CoV-2.

Participants who directly or indirectly knew people who had suffered or died as a result of SARS-CoV-2 typically felt that this experience heightened their concerns about the virus. This personal experience made the pandemic made the threat feel more immediate, or 'real':

"At the start of the pandemic, a known person to us used to go to the mosque before the lockdown, he died - he lived 3 streets from us - from COVID-19. You realise at that time that it is something serious." *(Male, 35-54, Pakistani, Positive)*

These experiences highlighted just how dangerous the virus could be. Those who had been bereaved due to suspected SARS-CoV-2 described feeling more scared of the virus after witnessing how badly it had affected their family members.

"I don't like the way my husband felt, when you saw him deteriorate etc. He looked awful. He didn't eat for a few days and lost his senses. When you see things like that, you don't want it happening to you." *(Female, 70+, Caribbean/Asian, Positive)*

Experiencing ill-health during the pandemic - sometimes with suspected SARS-CoV-2 - played a role in how participants felt about managing their risk of the virus. One participant had experienced SARS-CoV-2 symptoms early during lockdown and was still focused on recovering at the time of the interview; this experience had made him more careful about protecting himself. Another participant who had to go into the hospital regularly for a broken bone during lockdown found this to be a traumatic experience, which made him very anxious about the prospect of contracting the virus and having to return to hospital as a SARS-CoV-2 patient. A further participant who had been hospitalised with an asthma attack earlier in the year (prior to lockdown) imagined that the experience of not being able to breath during an asthma attack is probably similar to suffering from severe SARS-CoV-2, which made her more wary of the threat of the virus.

"I can't really avoid asthma attacks, but I can avoid COVID, so obviously I'm going to try as hard as I can to not get it." *(Female, 35-54, White, Negative)*

On the other hand, some participants who believed that they had already had SARS-CoV-2 were reassured by this experience, since they felt they would be able to fight it off if they contracted the virus a second time. One participant described how she and her family continued taking precautions even after they believed they survived the virus, as they knew they could possibly contract it a second time. In addition, they also believed that were they to contract the virus they would be able to survive it again because they had done so previously.

"Every one of us, as soon as we come indoors, we wash our hands. But at the back of our minds, all of us think that we have COVID-19 due to my husband dying of it." *(Female, 70+, Caribbean/Asian, Positive)*

Although people's experiences of the pandemic varied greatly, even participants who had not been directly affected by SARS-CoV-2 described having a moment where they understood the gravity of the

situation for the first time. For some, this was hearing about the death toll on the news and realising how many people were at risk.

"When you see the figures everywhere, people dying with COVID-19 all over the world, and then you realise it's not just for the old people or people with serious health conditions, anyone can be affected with this thing. That makes you change your behaviour." *(Male, 35-54, Pakistani, Positive)*

Another participant described the impact of knowing somebody on the frontline of the health service, as she was able to give him a better insight into the situation in hospitals as they treated people with severe SARS-CoV-2.

He has been listening to his neighbour who is ward sister and is on the frontline- this helps it sinks in. Hearing it first-hand makes it feel more real. *(Male, 70+, White, Negative).*

For one participant, it was the realisation that the world around them had started to look very different in the build-up to lockdown that led them to appreciate how serious the threat from SARS-CoV-2 really was.

"We still went to London, and when we did it was very empty, it was very obvious that a lot of people were staying away, and I suppose that emptiness of the city... we were like 'Oh, blimey, this is really serious,' and we did find that, things like hand rails, we didn't touch." *(Female, 55-69, White, Positive)*

Personal values

Participants were also motivated by various personal values, notably their perspectives on personal freedom and the rule of law, and their cultural background and values.

Attitudes towards personal freedom and adherence to law

There was a view among certain participants that it was important to follow coronavirus regulations because they saw themselves as law-abiding citizens and valued complying with government.

"You've just got to do what you've got to do ... just do as you're told." *(Male, 35-54, White, Positive)*

For some participants, this attitude was shaped by their experiences in life. For example, one participant spoke about how his time in the forces meant that he had learnt to always follow orders, and although he found following guidelines annoying, he strongly believed it was important and the right thing to do. Another participant who worked in healthcare described how the fact that they were responsible for enforcing the guidelines at work meant that it was of added importance to them to do the same on a personal level to avoid being hypocritical.

"From the type of job I do as well, we're there having to enforce the guidance so I think you have to follow it yourself, really. Otherwise it's very hypocritical." *(Female, 35-54, White, Invalid)*

Participants noted that government directives were the trigger for new behaviours that people would not have done without being asked. such as wearing a mask. Across the research it was clear that these behaviours often became habitual, and over time participants internalised these behaviours and wanted to continue them for personal reasons.

"At first, I wore the mask because of government regulations, but I wear a mask now anywhere I go, regardless of regulations because I feel it's safer" *(Female, 70+, Caribbean/Asian, Positive)*

Attitudes towards following government guidelines were linked to trust in government. Those who had a high degree of trust in government, often viewed the guidelines as an absolute guide to behaviour and an indication of risk. For example, when regulations were relaxed, some participants had immediately taken advantage of this.

"We followed the advice so that once you were allowed to meet one person from one household, and whatever the legislation was, that's what we did, and we took full advantage of that as soon we were allowed to." *(Female, 55-69, White, Positive)*

One participant explained that they looked to the government guidelines as they believed they were more reliable than making decisions based on the news media which *"sensationalised"* the virus.

Others were less comfortable relying on the government, instead placing more value on individual decision making. Typically, these participants were anxious about the threat of SARS-CoV-2 and took their own precautions regardless of regulations. Sometimes this was because participants did not believe the government had been handling the pandemic effectively, while others naturally valued taking personal responsibility for their own safety. For example, one participant who said he did not generally trust government did a lot of his own research about SARS-CoV-2 to inform his decision making. Another participant reflected that there was currently too much that was still unknown about the virus to change their behaviour and relax their precautions.

"I'm one for waiting and seeing...I'm not going to put myself at risk like that." *(Female, 35-54, White, Invalid)*

Cultural background/ influences

Alongside personal values, participants' cultural background and values also came into play when it came to taking precautions against SARS-CoV-2.

Participants with family in different parts of the world described being more aware of the threats of the virus and from earlier on in the global pandemic. For example, one participant who had family in Hong Kong ordered lots of face masks earlier in the year, as her family had advised her that she would need them. She also said that she felt more accustomed to the idea of wearing a mask as it was common in Hong Kong before the pandemic broke out, so this behaviour change did not feel so drastic for her.

Even when participants did not have family overseas, some reported being influenced by other cultural norms and approaches to the virus. One participant said they researched how other countries were managing the threat from SARS-CoV-2 in order to help them better evaluate the UK's approach, while others aspired to follow what they perceived to be a social norm of mask-wearing in Asian countries such as Japan or China.

"I keep thinking deep down that, even if the Government say to stop wearing a mask, and the scientists say to stop wearing a mask, it's all safe, I think I'll still be wearing mine like the people in the East. Some Japanese and Chinese people come touring over here and they have their mask on. I'm hoping to do that." *(Female, 70+, Caribbean/Asian, Positive)*

Social influences

Family and friends emerged as a source of influence. Overall, participants typically felt that family and friends felt the same way as they did about how to approach the risks posed by SARS-CoV-2.

"Everybody that I know thinks we're doing the right thing and everybody we know are doing the same that we are." *(Male, 70+, White, Invalid)*

The pandemic was a common topic of conversation with family and friends, and one participant said they had set up a family group discussion on a social media app to use as a behavioural reference point. They used this group to discuss the protocols taken by the different nations they resided within, talked through what they personally felt were the best methods to protect themselves and shared news regarding Covid-19. For certain participants, the pandemic had changed the way they made decisions about how to act, as their actions now had serious implications for the people they were living with. Participants described a more communal approach to decision making during the pandemic, to explicitly factor in their family's opinions when deciding how to behave. For example, one participant said that if they wanted to do anything outside of the house, they would check with their family first to make sure they agreed it was safe enough. Another participant said that his wife was keen to follow the guidelines and that, if he had wanted to see anyone other than his parents or brother, his wife would not let him.

Family members who lived in other households were also described as influencing behaviours, with concerned relatives giving participants advice on what measures they should be taking to protect themselves. For example, one participant explained that he and his wife were constantly getting updates on what they should be doing from their three sons. Conversely, there was also a view that listening to family and friends' views on the pandemic was unhelpful, as they did not know enough to give reliable advice or were contributing to *"scaremongering"* via social media.

The perspectives of health professionals were also influential. One participant had a long-standing cough at the start of the pandemic, which she did not believe was related to SARS-CoV-2. Their GP had also not been concerned that it was SARS-CoV-2-related and, even following a positive antibody test result, the participant was still unsure whether it had been related to the virus.

An official perspective on individual risk was also influential. For example, one participant had not been worried about her risk of picking up the virus until she filled out a risk assessment at work. Her employer told her that she was high risk and changed her role so it was no longer public-facing, which made her more concerned about becoming infected with SARS-CoV-2.

"It's only since I've been back at work that I really think about how concerned and how scary it can be … because I've had risk assessments at work and they say [I'm high risk]" *(Female, 35-54, Black Caribbean, Positive)*

Appendix 3: Methodological annexes

Screener questionnaire

Good morning/afternoon/evening, my name is…. contacting you on behalf of Ipsos MORI, the independent social research company and Imperial College London, as a follow-up to the recent survey you took part in.

This latest study is exploring different people's experiences of taking the home antibody test, and their responses to different kinds of test results in a little more depth. As part of this, we would like to conduct a further telephone call with you for an hour.

This interview is just to establish eligibility for the research project and will take around 10 minutes. The research project itself will comprise of a telephone interview and will last 1 hour. Eligible participants will receive £40 for their time.

You have the right to withdraw your consent to process the information you provide or object to our processing of your information. The research activity and this interview will be conducted in accordance with the Market Research Society Code of Conduct, and the information you provide will be treated in accordance with data protection law.

During this interview I will need to ask specific questions about your ethnicity. This information will only be collected with your explicit consent and is being collected [to ensure that the research is representative

Q1.	**Are you happy to continue on this basis?** SINGLE CODE ONLY		
	Yes	1	CONTINUE
	No	2	THANK AND CLOSE

Q2.	**How would you describe yourself?**		
	Male	1	AIM FOR 20 MALE, 20 FEMALE. THOSE RESPONDING 'OTHER' MAY PARTICIPATE.
	Female	2	
	Other	3	
	Prefer not to say	4	

Q3	**How old were you on your last birthday?** WRITE IN & CODE EXACT AGE				
	Exact Age				
			18 – 34	1	AIM FOR 10 IN EACH BRACKET
			35 – 54	2	
			55 - 69	3	
			70+	4	

Q4	**How would you describe your ethnicity?** SINGLE CODE ONLY		
	White British (English, Welsh, Scottish, Northern Irish, British)	1	• AT LEAST 5 BLACK/ AFRO-CARIBBEAN • AT LEAST 5 PAKISTANI/ BANGLADESHI • AT LEAST 5 OTHER MINORITY ETHNIC
	White and Black Caribbean	2	
	White and Black African	3	
	White and Asian	4	
	Other Mixed / Multiple ethnic background. Please specify: _____	5	
	Indian	6	
	Pakistani	7	
	Bangladeshi	8	
	Chinese	9	
	Other Asian background. Please specify: _____	10	
	Black African	11	
	Black Caribbean	12	
	Other Black / African / Caribbean background. Please specify:_____	13	
	Non-British European. Please specify:_____	14	
	Other. Please specify:_____	15	

Q5.	**What is your current employment status?** SINGLE CODE ONLY		
	In full-time employment	1	MONITOR EMPLOYMENT STATUS
	In part-time employment	2	
	Currently not in paid employment	3	
	In full-time education/studying	4	
	Look after the home / children	5	
	Carer	6	
	Retired	7	

Q5b.	**And could you tell me what it is you do for a living?**		
	Position/rank/grade		MONITOR SEG
	Industry/type of company		

Q5c.	**And could you tell me what the chief income earner does for a living (if not yourself)?**		
	Position/rank/grade		MONITOR SEG
	Industry/type of company		
	Number in charge of		
	Social Grade		

Q6	**IF REQUIRED TO CONFIRM:** Have you been contacted by letter or text message to say you are at risk of severe illness if you catch COVID-19 due to an underlying health condition and should be shielding (i.e. stay at home at all times and avoid face-to-face contact for at least 12 weeks except from carers and healthcare workers)?		
	Yes		RECRUIT AT LEAST 8 PARTICIPANTS WHO ARE 'SHIELDING'
	No		

Q7.	**How much would you say you personally know about science? A lot, some, not much or nothing at all?**		
	A lot		MONITOR REPORTED SCIENTIFIC LITERACY
	Some		
	Not much		
	Nothing at all		
	Refused		

Q8	**For taking part we will arrange for your thank you to be sent to you via bank transfer or cheque after you have taken part in the interview. Which of these methods of payment would you prefer?**		
	Cheque	1	
	BACS	2	Continue to grid

Could I please record your bank details for this purpose?

SORT CODE: ☐☐-☐☐-☐☐

ACCOUNT NO.: ☐☐☐☐ ☐☐☐☐

Q9	**It may be necessary for Ipsos MORI to contact you by email or telephone after the research has taken place to follow up on ideas generated during the discussion. You would only be contacted if strictly necessary and only in connection with this research. Are you happy to agree to be re-contacted on this basis?**		
	Yes	1	CONTINUE
	No	2	REFER TO OFFICE

Discussion guide

1. Research aims and objectives

The research aims to explore **attitudes, perceptions and responses of the public towards home antibody tests and their results** in order to establish:

- How do *attitudes and experiences of the pandemic prior to the test* influence attitudes towards/ decisions to do the home antibody test result?
- How do *experiences of the home antibody test itself* influence attitudes to the test result?
- How do *perceptions of the test/ knowledge of antibodies/ immunity* influence attitudes towards result?
- How do *positive/ negative/ invalid test results influence [reported] individual attitudes and behaviour*?

2. Background and context

This research consists 40 qualitative interview with members of the public who have participated in a COVID-19 antibody test with:

- 20 people who have tested positive;
- 10 people who have tested negative; and
- 10 people who have no valid result.

A purposive sampling strategy will be used, with quotas set on age, gender, ethnicity and shielding status, with the aim of ensuring a diverse range of participants. A monitoring quota on scientific literacy will be included.

The study is nested within a larger quantitative study to *measure the impact of home antibody testing on preventive behaviour* (among other objectives). A follow-up survey of a sub-sample of people who completed an antibody test [in 'Study 5 - first round'] will be carried out 2 – 4 weeks after the initial study, and a further follow-up survey and repeat antibody test on all participants who tested antibody positive in the same study will be carried out 4-6 weeks after the initial study.

The qualitative data from this study will **provide in-depth contextual information on the decision-making rationale and behavioural choices** of individuals who have taken the home antibody test to completement the data on prevalence of relevant issues generated by the surveys.

3. How to use this guide

The guide has been developed so that the key questions are, on the whole, straightforward, with key in **bold.** Interviewers should focus on using these broad core questions to elicit conversation, and then the probes to pick up on things that may not otherwise be covered.

- Follow-up, relevant questions/probes are included with black bullet points which would be good to ask, if time/relevant
  - White bullet points detail *further suggested probes* to keep participants on track/ensure they cover necessary topics.

1. Introduction	**5 mins**
THANK PARTICIPANT FOR TAKING PART. INTRODUCE SELF, EXPLAIN THAT… • Ipsos MORI would like to find out more about their experiences of the home antibody test, and how the result has influences their choices. • This telephone call will help us understand your current situation and give us the chance to explain your role in the research. **The call won't take longer than an hour – is now still a good time?**	• Orientates the interviewee, gets them prepared to take part in the interview • Outlines the 'rules' of the interview (including those we are required to tell them about under MRS and Data Protection Act guidelines)

To give you a bit of background, Ipsos MORI is an independent research organisation …. GO THROUGH THE INFORMATION SHEET WITH THE PARTICIPANT – MAKE SURE THAT THEY UNDERSTAND RELEVANT ISSUES **Do you have any questions about the research? Can I check that you are happy to participate?** GET PERMISSION TO DIGITALLY RECORD – TRANSCRIBE FOR ANALYSIS, NO DETAILED ATTRIBUTION.	
2. Participant background and context	**5 mins**
If it's OK with you, I'd like to check the information I have about you here – and please feel free to let me know if there are any corrections. IF REQUIRED: **The reason I am asking is that we would like to understand to what extent you are in one of the 'at risk' categories for the virus.** • CHECK AGE • CHECK SEX AT BIRTH • CHECK ETHNICITY • Please can you tell me if you are currently working? What do you do? IF REQUIRED FOR CLARIFICATION: Are you a key worker? • Do you have any existing health conditions? Would you be able to tell me what these are? • Would you consider yourself to have been 'shielding' during the pandemic – either yourself or someone else in your household? **I'd now like to get a sense of how things have been for you since the pandemic began, and your circumstances.** • Who do you share your home with? • What kind of things have you been doing during the lockdown? Can you tell me about any routines you have developed or how you and your household have adapted? • What, if anything, has concerned you about the specific issue of the risks of contracting the virus – by which I mean for you or your household specifically? **You've now had your antibody test result. I'd like to know more about your overall feelings on this, which I'll be coming back to later in our discussion.** • What do think of the result? How does it make you feel? • Have you been reflecting on the result at all? What have you been thinking? • Have you been thinking of doing anything differently as a result of the test? What are these things? Why will you be acting differently?	• Ensure a clear and accurate understanding of the participants risk status To place participants' responses in context and understand the broad narrative of their attitudes to the test result in preparation for deeper exploration Note- routines may help to explain behaviour change later Emotions and outcome expectations covered here may contribute to behaviour change

3. Attitudes to and experiences of the pandemic prior to the test	15 mins
I'd now like you to think back to <u>before you took the home antibody test</u>. **Please can you tell me how you felt about your personal risk of contracting COVID-19?** ALLOW PARTICIPANT TO THINK BACK WITHOUT FURTHER PROMPTS**.** IF REQUIRED PROMPT ON: • *Fear? Vulnerability? Immunity?* **What did you think the risk of contracting the virus was? Why?** **Where did you get your information about COVID-19 risk from?** IF REQUIRED PROMPT: • *Friends/ family? News/ social media? Government guidelines?* • To what extent would you say you were you able to understand this information? • What, if anything, was hard to understand? Why? • What, if anything, was straightforward to understand? Why? **Did you follow government guidelines fully?** IF REQUIRED PROMPT: • Thinking about when you recently went on a walk/ went shopping/ visited a friend/ arrived home … how did you follow guidelines in those situations? **Can you tell me the specific things you did to protect yourself?** IF REQUIRED PROMPT: ○ *Cancelled usual social activities* ○ *Stopped going out to a place of work* ○ *Wear a face mask outside my home* ○ *Avoid physical contact with people* ○ *Follow handwashing recommendations* ○ *Use hand sanitiser more than usual* ○ *Don't take public transport* **I'd like to ask you a few questions about why you did you these things.** • How effective did you think doing these things would be? Why? • How did you feel about doing these things? To what extent did you want to do them? Why? • Was it important to you personally to do these things? • How does doing these things fit with your sense of self? **Was there anything that prevented you from following the guidelines? What were they?** • *Colleagues/ Friends/ Family* • *Resources (e.g. mask/soap availability)* • *Skills required to follow guidelines* • *Disruption to routines/ daily life*	• This section explores role of attitudes towards the pandemic in shaping decisions to take the test Personal risk may brink up motivations for behaviour change- outcome expectations/emotions/identity (do they seem themselves as vulnerable?) Note **social or cultural norms** may present here Note i**dentity** (following guidelines may reflect who they feel they are as a person) Note **capability** to understand may impact behaviour later on Note **outcome expectations** Note **emotion** and **internalisation** Note sense of **identity** Note **social norms**, possibly **identity**- how do they want others to see them

• *Understanding of what was required – e.g. how certain they were about what they should be doing? / how carefully did they have think about and manage what they were doing?*
 	
Were there any things that helped you follow the guidelines? What were they?
 	
• *Colleagues/ Friends/ Family*
• *Resources (e.g. mask/soap availability)*
• *Skills required to follow guidelines*
• *In a position to easily change daily routines*
• *Understanding of what was required – e.g. how certain they were about what they should be doing? / how carefully did they have think about and manage what they were doing?*
 	
I'd now like to know [more] about any experiences you have had of the virus itself.
 	
• Did you suspect you had Covid-19 at any point? When?
  ○ What symptoms did you experience?
  ○ Can you describe what happened? How did you feel?
  ○ Did you seek any medical advice? How did you feel about the advice you received?
  ○ Were you tested or confirmed to have the virus?
 	
Did this experience influence your interest in taking the home antibody test all? EXPLORE IN FULL
	Note **physical barriers, capability** and **routines** can inhibit behaviour change
	
	Motivation- **Self-efficacy** (confidence = easier to do)
	Ability- **Capability** (to understand what is best to do)
	Processing- **Decision forces** (how they make decisions)
	
	Consider hypothesis that *some people want to do the test to confirm their suspicions about COVID-19-like symptoms they had over last 6 months*

4. Attitudes to and experiences of the antibody test	**15 mins**
I'd like to know more about your thinking on taking the home antibody test. **Why did you want a test?** • *Advice from colleagues/ Friends/ Family?* • *Own understanding/ personal research about the issue?* • *Desire to know if had had the virus?* **What did you think the test would tell you?** • How effective did you think it would be? **Did you hope for a particular result? Why?** • Can you explain to me your understanding of what a positive antibody test might mean for you? • What did you think your test result would be? • Was it important to you personally to take the test? Why? **When/how did you access a test?** • *Through participating in ongoing research on COVID-19 (to help understand the virus)* • *Paid for one*	• This section explores role of experiences and perceptions of the test itself in shaping behavior following the result Note **social norms, capability, emotion** (curiosity? fear?) Note **outcome expectations** of test *Note potential importance in beliefs that presence of antibodies in minimises COVID-19 risk/ is equivalent to immunity.* Note **outcome expectations** and **internalisation**

I'd now like to talk to about the test result and what happened next, right up until now. **Can you describe what happened when you received the result?** ASK PARTICIPANT TO TALK THROUGH THE PROCESS • When did you get it? • What do you understand this result to mean? EXPLORE IN FULL • How did you feel when you got your result? Why? IF REQUIRED PROMPT: ○ *Happy/ Relief/ Worried/ Confused* • How easy or difficult was it to interpret the result? Why? • To what extent you trust the result? Why?	
5. Personal implications of the test result	**15 mins**

I'd now like to talk to you about the personal implications of the result, and what it means for the choices you make in your everyday life.
 	
What do you think the result means for you personally?
 	
IF RESULT WAS POSITIVE – REMINDER ABOUT CONFIDENTIALITY, THEN EXPLORE
 	
• **Is there anything you are doing differently now? Why?**
  ○ *Resumed usual social activities*
  ○ *Went out to a place of work*
  ○ *Don't wear a face mask outside my home*
  ○ *Don't avoid physical contact with people*
  ○ *Don't follow handwashing recommendations*
  ○ *Don't use hand sanitiser more than usual*
  ○ *Take public transport*
 	
• **What are your reasons for changing your behaviour?**
  ○ *Understanding of what result means – EXPLORE IN FULL*
  ○ *Immunity perceptions*
  ○ *Government guidance changes*
  ○ *Other*
 	
• How would you feel if you did not have a positive antibody result?
 	
• Government has now relaxed some of the social distancing guidelines, how do you feel about this, given your result?
 	
IF RESULT WAS NEGATIVE/INCONCLUSIVE:
 	
• **How satisfied are you with the result?**
• Would you take another test? Why?
• You mentioned that your result made you feel [*use participant language*]. If your result was positive do you think you would feel differently? How?
 	
• **Would you behave differently? How?**
  ○ *Cancelled usual social activities*
  ○ *Postponed going out to a place of work*
	Areas suggested are drawn from the list of pre-codes in the accompanying survey
	
	Note **ability** and **outcome expectations**
	
	Note **environmental factors** (guidelines)
	
	Note **emotions**

○ *Wear a face mask outside my home* ○ *Avoid physical contact with people* ○ *Follow handwashing recommendations* ○ *Use hand sanitiser more than usual* ○ *Don't take public transport* • Government has now relaxed some of the social distancing guidelines, how do you feel about this, given your result? TO ALL **Can you tell me about any conversations you've had with other people about yours or their COVID-19 risk?** • Have you shared your result with other people (over phone/ in person/ on social media)? ○ Who: family/friends/housemates ○ What was the response: positive/negative • Why did you share your result? **Has anyone else you live with/see regularly had an antibody test (positive or negative)?** • How are they acting since having the test? ○ Changed ○ Stayed this same ○ Not noticed	Note **social/cultural norms** Note **social norms**
6. Warm down and interview close	**5 mins**
What are your thoughts on Covid-19 antibody tests overall • Who do you think should have the antibody tests? • Who do you think should administer the antibody tests and where? **Is there anything else you'd like to share with us about your experiences of the antibody test?** **THANK AND CLOSE INTERVIEW** **CONFIRM HOW INCENTIVE WILL BE PAID**	**Emotion** (how comfortable they are in different environments) **Capability** (in accessing tests) Ability- **Routines** (how easy this would be to access within routine) **Physical** - (environment/resources)

Thematic framework

The application of the short thematic and summary framework below provided a first step in data management and analysis for the research study. This was followed by detailed analysis of interview fieldnotes and transcripts and supported by team discussions.

- **Participant summary:** *Short pen portrait summarising participant's current situation*
- **Any key experiences of the pandemic?** *Describe impact on perceptions of risk/ attitudes & behaviours before the test*
- **Why they did the test? And what they hoped result would be?**
- **Experiences of the test itself?**
- **What they thought about the test result?**
- **Did anything change as a result of the test result - and why?** *Or what would have changed if they had had a different result?*
- **Significant behavioural factors** *(either before or after taking the antibody test - specify context)*
  - **Motivation**: outcome expectations, identity, emotion
  - **Habits and routine**
  - **Understanding of information**: any difficulties accessing or processing info?
  - **Environmental factors:** home, work, care, who they shared a home with
  - **Social factors:** friends, family cultural norms

The MAPPS behavioural research framework

A well-established framework that has been used across public policy is COM-B and the Behaviour Change Wheel (BCW) process (Michie, van Stralen & West, 2011), which uses COM-B as the system to identify and understand the influences on behaviour and the BCW process as a way to develop targeted interventions to change behaviours.

Specifically, COM-B identifies three factors as necessary and sufficient prerequisites for performance of a specified behaviour:

- capability refers to the psychological and physical abilities to perform a behaviour, and includes knowledge and skills
- motivation involves all the processes that invigorate and direct behaviour, including not just goals, plans and beliefs but also 'automatic' processes involving emotions, habits and impulses

- opportunity involves all factors that are external to an individual that may influence engagement with an activity, ranging from the physical environments in which people spend time to the social and cultural setting that dictates how we perceive and think about particular activities.

Further specification of these influences is provided in the Theoretical Domains Framework, which is a more elaborated version of COM-B (Cane, O'Connor, & Michie, 2012). The domains are knowledge; skills; memory, attention and decision processes; behavioural regulation; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; intentions; goals; reinforcement; emotion; environmental context and resources; and social influences.

Through the use of COM-B and TDF to understand the influences that shape behaviour, the BCW guides the practitioner through to intervention functions, policy categories and to specific interventions in their taxonomy of Behaviour Change Techniques (BCTs; Michie et al., 2013), which is also the basis of a database of intervention BCTs that is used to codify the use of interventions in published intervention papers and reviews. As such, the BCW provides a useful guiding framework that links an understanding of behaviour through to the development of interventions.

Despite the many strengths and applications of COM-B and the BCW process, as practitioners it can be difficult to identify the TDF domains from tangible research insights and the guidance for developing interventions can be difficult to develop without a strong familiarity with the literature. Therefore, we have built on COM-B and the BCW process a more codified system and process to provide additional guidance with the application of a behaviour change framework.

MAPPS is a framework that has 5 dimensions and 11 categories, to identify and understand the influences on behaviour. The 5 dimensions are Motivation, Ability, Processing, Physical, and Social, and the specific categories and their contents are provided in Figure 6.1. below. The MAPPS framework covers a range of influences on behaviour, so provides a holistic lens for identifying and understanding what may be underpinning the behaviours being explored.

The MAPPS dimensions and category contents

MAPPS DIMENSION	MAPPS CATEGORY	Contents	WHAT IT MEANS
Motivation	Outcome expectations	How estimation/predictions about outcomes affect motivations	I don't think it will work
	Emotion	How feelings/emotions and emotion regulation can support behaviours	I'm not feeling like doing it
	Internalisation	How behavioural motivation evolves from extrinsic to intrinsic	I don't want to do it
	Identity	How personal and social identities support behaviours	I'm not that kind of person
	Self-efficacy	How feelings of self-efficacy and mastery support change and persistence	I don't feel able to do it
Ability	Capability	How we learn new behaviours	I don't have the skills to do it
	Routines	How behaviours become habits, embedded in routines	It's not part of what I usually do
Processing	Decision forces	How heuristics, biases and behavioural regulation guides decisions and behaviour	How things are processed

Physical	Environmental factors	How the physical environment, context and resources sparks, supports or impairs behaviour change	How things are set up
Social	Social Norms	How group, transient or situational norms guide behaviour	What's expected of us
	Cultural Values	How broad cultural values affect behaviour	The way we live

We have applied MAPPS to frame the different influences on behaviour to unpack what was shaping behaviour both before and after taking the test. We've highlighted the key MAPPS categories that have emerged from our analysis and used these to make recommendations for future intervention development. Given the nature of the research it is difficult to detail the precise temporal confluence of these influences; therefore, we use the external context as the starting point and then detail how different internal influences may shape behaviour.

Building off from this understanding, the MAPPS framework is linked through to intervention development. Further, to help with recommendations for intervention development, the MAPPS categories are linked through to different intervention building blocks in a structured way. The different building blocks and their aims are:

- Understanding: Building knowledge, help people see relevance and importance.
- Feedback: Providing positive or negative guidance, direction, or outcome expectancies.
- Planning: Developing and maintaining intentions or skills needed to perform a behaviour.
- Restructure: Changing environment to enhance or remove influences.
- Connect: Allowing connections to be formed or making these available as informational sources.

How these intervention building blocks relate to the MAPPS categories to inform intervention development will be outlined in the recommendations that are provided.

Ipsos MORI's standards and accreditations

Ipsos MORI's standards and accreditations provide our clients with the peace of mind that they can always depend on us to deliver reliable, sustainable findings. Our focus on quality and continuous improvement means we have embedded a 'right first time' approach throughout our organisation.

ISO 20252

This is the international market research specific standard that supersedes BS 7911/MRQSA and incorporates IQCS (Interviewer Quality Control Scheme). It covers the five stages of a Market Research project. Ipsos MORI was the first company in the world to gain this accreditation.

ISO 27001

This is the international standard for information security designed to ensure the selection of adequate and proportionate security controls. Ipsos MORI was the first research company in the UK to be awarded this in August 2008.

ISO 9001

This is the international general company standard with a focus on continual improvement through quality management systems. In 1994, we became one of the early adopters of the ISO 9001 business standard.

Market Research Society (MRS) Company Partnership

By being an MRS Company Partner, Ipsos MORI endorses and supports the core MRS brand values of professionalism, research excellence and business effectiveness, and commits to comply with the MRS Code of Conduct throughout the organisation.

Data Protection Act 2018

Ipsos MORI is required to comply with the Data Protection Act 2018. It covers the processing of personal data and the protection of privacy.

For more information

CONTACT DETAILS TO ADD

3 Thomas More Square
London
E1W 1YW

t: +44 (0)20 3059 5000

www.ipsos-mori.com
http://twitter.com/IpsosMORI

About Ipsos MORI Public Affairs

Ipsos MORI Public Affairs works closely with national governments, local public services and the not-for-profit sector. Its c.200 research staff focus on public service and policy issues. Each has expertise in a particular part of the public sector, ensuring we have a detailed understanding of specific sectors and policy challenges. Combined with our methods and communications expertise, this helps ensure that our research makes a difference for decision makers and communities.

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