

Behavioural Insights research to support the response to COVID-19: a survey of implementation in the EU/EEA

17 February 2021

Key messages

- Behavioural Insights (BI) research is an important tool for understanding behavioural choices, barriers and drivers within a population. It can therefore contribute to addressing 'pandemic fatigue'¹ through informed decision-making and optimised implementation of public health interventions.
- A wide range of topics have been covered in COVID-19-related BI research in the European Union/European Economic Area (EU/EEA). Ten countries participating in an ECDC survey on this issue reported that the most commonly studied areas included assessments of the populations' acceptance of or compliance with the measures put in place to control the spread of COVID-19.
- Most of the BI research conducted to date in participating countries has been quantitative, with use of nationally representative samples of the general population. Qualitative BI research has not been as widely used in these countries during the COVID-19 pandemic, largely due to limited capacities, time, resources and staff.
- The potential value of the BI research gained during the pandemic has not been realised fully in the responding countries to date, although there are indications that BI research is a growing area. One reason suggested for this limited application of the learning from BI research is the under-representation of social and behavioural sciences in relation to biomedical expertise within national COVID-19 management teams. Since BI has not been extensively integrated in many countries, there is also relatively limited awareness about its potential added value. Further, funding for conducting BI research has not been prioritised in most of the participating countries.
- Findings from BI research in several participating countries have influenced risk communication activities through, for example, helping to frame the ways in which different recommended behaviours have been presented to the public; enhancing the uptake of COVID-19 testing through use of insights gained via theories of behavioural change; and providing direction in the messaging around COVID-19 vaccines and issues surrounding pandemic fatigue.
- These successes could help lay the foundation for further enhancing of national capacities for BI research in EU/EEA Member States, and for integrating them more fully into wider preparedness and response structures.

¹ WHO has defined 'pandemic fatigue' as '*demotivation to follow recommended protective measures*'.
<https://apps.who.int/iris/bitstream/handle/10665/335820/WHO-EURO-2020-1160-40906-55390-eng.pdf>

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- The marked geographical disparity in responses from different regions of the EU/EEA in this study suggests that future steps towards building EU-wide capacity in BI research should include a particular focus on the countries not responding to the survey in order to ensure that the needs of these Member States are properly met.
- Meanwhile, immediate steps can be taken to: (i) facilitate networking opportunities of BI experts in Member States via webinars and, eventually, face-to-face meetings; (ii) map the BI research being conducted in universities and in other social science research institutions across the EU, as a complement to the work being conducted and led by national authorities; and (iii) synthesise published data on aspects of behaviour that may have direct policy and programmatic value.

Scope

This Technical Report presents evidence about the current status of Behavioural Insights (BI) research being conducted in the ten EU/EEA Member States that responded to an ECDC survey, within the context of the COVID-19 pandemic. The focus is on identifying experiences, challenges, and key lessons learned in translating the findings from BI research into effective strategies for pandemic response, and for optimising risk communication activities. The work has been undertaken in the context of concern about sub-optimal compliance in some Member States to the non-pharmaceutical measures that are in place to reduce the spread of the SARS-CoV-2, and also with regards to the need to support the implementation of national COVID-19 vaccination programmes.

Note that the focus here is predominantly on BI research reported by survey respondents that is conducted, coordinated or led by national health authorities. Reference is made to university-based BI research where it is relevant to the framework of a national level initiative. Note also that this report only discusses BI work conducted in countries that responded to the survey investigating this topic. There are other instances of BI research being conducted in EU/EEA Member States that are not reported upon here, such as those described in a recent OECD report on work in Ireland and Slovakia [1].

Target audience

This document is intended for national and regional public health authorities in EU/EEA Member States, risk communication specialists, and policymakers.

Background

Over the course of the COVID-19 pandemic, governments across the EU/EEA have put in place a wide range of non-pharmaceutical interventions (NPIs) in an effort to control the spread of SARS-CoV-2. These include recommending good hand hygiene and the use of face masks, cleaning and ventilation of indoor spaces, as well as promoting physical distancing and limiting and restricting movement [2]. As of the end of December 2020, a major vaccination programme against COVID-19 has also begun, albeit with a limited supply in the initial phases of the rollout [3]. Collectively, NPIs and vaccines have the potential to bring the COVID-19 pandemic under control, but they can only work effectively if they are accepted and comprehensively adopted by the populations in Member States. Further, even with vaccines starting to become available, it will take time for them to have a visible impact on the course of the pandemic. Therefore, some level of NPI measures must remain in place to limit SARS-CoV-2 transmission in the meantime.

Regarding the NPIs, substantial evidence has accrued concerning the challenges faced in ensuring their sustained implementation. The imposition of restrictive NPIs, such as stay-at-home measures, has been associated with increases in loneliness, stress levels and depression [4-6], and vocal or even violent opposition has emerged since governments moved to re-impose strong protective measures during the last months of 2020 and in early 2021 [7-11]. As a result of these and other related concerns, the term 'pandemic fatigue' has been coined by WHO to describe people's decreasing motivation to follow the recommended protective behaviours [12]. Pandemic fatigue can lead to sub-optimal compliance to the NPIs that continue to be necessary in order to minimise new infections.

It is important to note that what is acceptable to a population in one setting, in terms of willingness to comply with the recommended or mandated NPIs, may not be the same as what is acceptable to another population in another setting [13]. Acceptance of NPIs can be both dynamic over time and geographically specific, which means that authorities need to have insights, on an ongoing basis, into people's perceptions of the measures as well as of their willingness and ability to comply with them. This is especially the case with socially and economically vulnerable populations, who may face structural constraints to compliance [14]. Authorities also need to know how policies and risk communication messaging may contribute to affecting people's perceptions,

willingness and abilities, and thereby how they can facilitate optimal compliance levels. The importance of good compliance to the NPIs is now especially urgent, given the proliferation of highly transmissible variants of the virus which have already necessitated even stricter measures in some EU/EEA countries [15].

With regards to COVID-19 vaccines, there are great hopes that vaccination programmes will provide the most reliable means for populations to be able return to a life relatively unencumbered by the NPIs that are currently in place across the EU/EEA [16]. However, although there has been an increase over recent months in the proportion of people who say that they would be willing to receive a COVID-19 vaccine, acceptance rates currently range from up to 80% in Denmark to as low as 46% in France [17]. Defined as *'a delay in acceptance or refusal of vaccines despite availability of vaccine services'* [18], vaccine hesitancy is caused by a range of factors, associated one way or another with complacency about the disease in question, convenience (or not) of receiving the vaccination, and/or confidence (or not) in the safety and effectiveness of the vaccine [18]. Understanding and addressing these factors in the context of the COVID-19 pandemic is an essential pre-requisite for ensuring wide uptake of the vaccine, once the level of supply picks up, and thereby for contributing to suppressing the pandemic [19].

In sum, the behavioural dimension of the pandemic will continue to be important for the foreseeable future throughout the EU/EEA, in relation to both sustaining compliance to the NPIs [20] and facilitating high levels of vaccine uptake [21]. Thus, ongoing research into people's knowledge, attitudes, intentions and behaviours – collectively known as Behavioural Insights (BI) research – is needed to inform decision-making processes as well as any risk communication efforts that are put in place. Recognition of the need for expertise to conduct this sort of work has grown over many years, including during the HIV/AIDS pandemic, SARS in 2002–03, Ebola in 2014–16, and Zika in 2016–17 [22–24]. Strong arguments have been made for integrating social and behavioural sciences fully into the epidemic preparedness and response 'architecture' by ensuring investment at country level in order to build core capacities and competencies in these areas [25]. In the absence of such capacity and such research, authorities run the risk of formulating policies and communication strategies that are inconsistent with the needs and expectations of the population, and which may therefore have a sub-optimal impact on the pandemic.

Behavioural insights and decision-making for pandemic response

It is generally recognised that biomedical public health expertise should be a principle source of evidence to inform decision-making during health crises. However, there has long been a tendency for decision-making to prioritise biomedical information over more contextual information, such as that obtained through BI, which can nonetheless have a profound impact on the overall effectiveness of public health interventions [26]. One challenge surrounding evidence-based decision-making during crises more generally is the lack of clear, unambiguous and rapidly available information [26]. The inclusion of BI evidence likely compounds this challenge, since such evidence is generated according to different timescales and it involves different methodological traditions compared to biomedical and epidemiologic research. Further, since it offers context-specific and sometimes complex data, additional competences are required within such areas as health systems and social and behavioural sciences in order to fully leverage its value.

One approach for ensuring that the behavioural dimension is accounted for in decision-making is through enhancing transparency and collaboration in decision-making via dialogue and community engagement [27]. However, the time and opportunity for undertaking these activities has been constrained during the COVID-19 pandemic due to the rapid pace of developments [1]. OECD has reported on additional challenges related to incorporating a BI perspective into the response to the COVID-19 pandemic. These include: role clarity and expectation management for leveraging behavioural expertise; adequate financial and human resources related to BI; establishing processes for gathering evidence of the effectiveness of measures that depend upon behaviour change; and communicating the results that have been obtained from BI research [1].

Behavioural insights and risk communication

Public health risk communication faces a range of challenges in the context of the COVID-19 pandemic, if it is to be effective. These include: communicating in a context of uncertainty and evolving evidence; understanding risk perception as well as cultural and contextual aspects that can act as enablers or barriers to compliance with public health advice; and addressing pandemic fatigue. It is also essential that public health organisations are regarded by the public as trusted sources of information and that they are able to make their voice heard in the context of an 'infodemic' [28], characterised by overabundance of information – some that is factually correct and some that could be described as misinformation or disinformation. Further, it is important that risk communication facilitates realistic expectations amongst the community, and that it promotes acceptance and uptake of the measures [29].

In order to accomplish all this effectively, and as highlighted in the WHO Interim Guidance on COVID-19 Global Risk Communication and Community Engagement Strategy [30], risk communication and community engagement should be based on BI data. Such data can shed light on all the issues described above, as well as on people's changing perceptions and attitudes towards an issue, and the barriers and enablers that can influence their ability and motivation to adopt and/or sustain positive health behaviours.

Methods

Requests were sent to the ECDC National Coordinators of each Coordinating Competent Body in EU/EEA Member States², asking for nominations of one representative from their country to participate in an online, spoken, qualitative interview. Nominated interviewees should be working on BI issues in or for the national public health agency or the Ministry of Health, and it was requested that they had a good general overview of the BI research that had been conducted in their country during the COVID-19 pandemic to date. Interviewees should also be familiar with the process of incorporating the findings from such research into policy and/or into risk communication efforts. All EU/EEA Member States were invited to participate, even if they had not (yet) conducted any COVID-related behavioural research.

The first request for nominations was sent to the ECDC National Coordinators on 7 October 2020, and due to a limited response, follow-up emails were then sent to those who had not yet replied on 13 October, again on 5 November, and finally on 11 December 2020. Interviewees received the questions in advance of the discussion, thereby allowing them to prepare and collect any additional information that they may need (see Annex for the questions used).

Interviews were conducted by ECDC staff working on the project at a mutually agreed time, using video conferencing software. Interviews were scheduled to last for approximately 45 minutes, and all were completed in under 60 minutes. Written notes were taken by the interviewer during the discussions, and these were returned to the interviewees for verification and correction as necessary. Five of the ten participating countries responded with edits and additional comments.

Analysis of the notes was conducted using NVivo software, using the topics covered during the interviews as pre-identified themes. Some quotes from the interviewees have been used in the report in order to illustrate specific points, but these comments as well as the examples cited from specific countries have been anonymised.

Results

Participating countries

A total of 13 countries responded to our call for interviews. From these, interviews were conducted with national level experts from the following ten countries (in alphabetical order): Cyprus, Denmark, Finland, France, Germany, the Netherlands, Norway, Slovenia, Spain and Sweden. Interviews took place between 16 October 2020 and 13 January 2021. In six of the interviews, one expert was interviewed, while in the remaining four there were either two or three people involved in the discussion.

Of the other three countries, one replied that they were unable to nominate an interviewee "*because we do not have such an expert*", while for the other two, it turned out not to be possible to arrange an interview.

BI research conducted by the countries

Nine of the ten participating countries reported that they, as national authorities, had conducted or coordinated some sort of BI research over the course of the pandemic. This work was built on the foundation established by previous behavioural research on, for example, vaccine acceptance and antimicrobial resistance. The respondent from the tenth country, where no COVID-19-related BI research had been conducted or coordinated at national level, reported that it had never been seen as "*sufficiently urgent*" for someone to decide to prioritise it.

As a general principle, the main task of the national authorities is to advise their government; as such, the research conducted at national level is action-oriented, with an aim to produce evidence-based guidance. Nonetheless, key results are usually made publicly available on the respective websites in the form of reports, while articles for the scientific literature have also been produced in some countries, or are currently under development. The work has been accomplished in several cases through collaboration with academic, university-based colleagues.

² <https://www.ecdc.europa.eu/en/about-us/governance/competent-bodies>

Most of the BI research conducted to date has been quantitative, with use made of nationally representative samples of the general population (with data collected both online and on paper). This has facilitated the identification of geographical areas and socio-demographic populations in need of special attention. Qualitative behavioural research is generally not a high priority area in the responding countries, with a relatively limited amount of such work conducted: for example, social media monitoring has been undertaken in some of the countries, and qualitative research on health workers and on vulnerable groups including ethnic minorities and the elderly has also been conducted. Efforts are being made in some settings to enhance the capacity for qualitative behavioural research, but, in at least one country, we were informed that it has not been easy to develop a structure to facilitate this.

A wide range of topics have been covered in the COVID-related BI research, though the most commonly studied areas have included assessments of the populations' acceptance of or compliance with the measures put in place to control the spread of COVID-19. Additional topic areas have included people's perceived risk of infection, issues around mental health, trust in the authorities, anticipated vaccine acceptance, and COVID-related information needs. In one country, CCTV footage was used as a means of assessing people's compliance with physical distancing regulations and mask use. As indicated above, social media monitoring has also been conducted – though not extensively – as a means of identifying misinformation, including through qualitative assessment of feedback received on official social media accounts.

While most of the work has been designed, conducted and analysed by national level teams, four of the participating countries reported that they had also been using the tool from the WHO Regional Office for Europe (WHO-EURO) for behavioural insights on COVID-19, first published in March 2020, and updated in July 2020 [13]. A fifth country had plans to start using it shortly after our interview. The WHO-EURO tool includes 21 different topics on COVID-related knowledge, attitudes and behaviours, such as COVID-19 personal experience, prevention behaviours, perceptions of policies and interventions, trust in institutions, and expectations of a COVID-19 vaccine. It offers the opportunity, using nationally representative samples, to conduct '*rapid, flexible and cost-effective monitoring of public knowledge, risk perceptions, behaviours and trust*' [31]; and since it provides a standardised template for the research with many different modules, authorities can easily select the topics and questions that are of most relevance for them in their settings. While designed as a cross-sectional survey tool, it can also be conducted at intervals, thereby providing a longitudinal picture of trends over time. All the four countries that have been using it have done so on this basis, with one of them conducting a round of data collection every other week since March 2020.

With so much data collected on a regular basis through these surveys, the initial focus has generally been on generating a simple descriptive statistical analysis in order to provide the authorities with a rapid overview of the current situation. The more in-depth and complex analyses, which may be of more relevance for publication in scientific peer-reviewed journals than for immediate action, have had secondary priority. One of the countries that was not using the WHO-EURO tool had conducted a large national survey towards the end of the first wave of infections in the spring of 2020, but there were bottlenecks in cleaning the data, and it had still not been analysed at the time of our interview in November. Since the social situation has been very dynamic over the course of the pandemic, the long delay between data collection and analysis may mean that the findings from this work are no longer actionable or directly relevant by the time they are made available to the authorities.

Linking BI research findings to the decision-making process for pandemic response

An overall consensus from the interviewees was that there is rarely a clearly defined link between the findings from BI research and any specific policy or strategy decision – rather, the potential value of BI lies in providing a nuanced understanding of a given situation and thereby informing the development of more effective implementation plans. In one such case, qualitative research was conducted with managers and nurses in elderly care homes in order to identify means of reducing COVID-19-related mortality rates in these settings. The work contributed substantially to better and more tailored support for elderly care homes – if not to a direct change in strategy – including through the development of advice on using personal protective equipment, conducting large-scale testing of residents, as well as training in staff routines and information provision.

Successful use of BI findings was mentioned by an interviewee from a second country, who reported how their Prime Minister had participated at a press conference at which BI data were presented that showed low compliance to the mandated quarantine measures. The Prime Minister's presence gave authority and reinforcement to the message that compliance across the country would have to improve in order to help bring the virus under control. This represented a strengthening of the policy that had already been promoted, but it did not lead to a new strategy in itself. In this country, the people disseminating the results have a close relationship with the government, so it has been relatively straightforward for them to bring BI findings into the policy sphere.

A third interviewee explained that while the BI work has not led to changes in the strategies that have been promoted in their country, it has been used to ascertain the extent to which people are complying with the measures, while also providing evidence about the changing and dynamic views of the population towards both the pandemic itself and towards the measures that have been put in place to address it. It has therefore acted as an evaluation tool rather than as formative research intended to shape the response, and it has given the authorities in at least one country the confidence to judge what people will likely accept and comply with, as well as what they will not accept.

A potential missed opportunity was identified by a fourth interviewee, who described how unpopular internal travel bans were introduced in their country and then had to be withdrawn, a process that was reportedly politically costly. The interviewee stated that this situation might have been avoided if they had had data showing willingness by the population to comply (or not) with such measures, but such data were not available.

Another interviewee described how they had been asked to produce a one-page brief for the national COVID-19 crisis committee, based on BI findings. The brief had been read and considered, but neither this interviewee nor other BI colleagues had any power to represent the findings in any official capacity, and they did not know if any decisions were then taken based on what they had disseminated. Describing the decision-making process as “*vague and not transparent*”, the interviewee had worked hard to reach out to personal contacts and former colleagues to ensure that specific points made it onto the agenda, and some of this has indeed come through in public rhetoric.

In another country, our interviewee reported that BI research findings there had had “*no influence at all*” in terms of defining or shaping decisions about COVID-19 prevention measures; while another reported that, “*every time we make a recommendation, we find that it isn’t on the government’s plan*”.

Overall, a spectrum was found in the extent to which the political and institutional structures within which the interviewees worked either facilitated or impeded BI work in the participating countries, and in the degree to which BI research is embedded within the decision-making structures. Most interviewees described some level of difficulty in ensuring that their findings are properly taken into account by decision-makers.

A major challenge appears to be the fact that national COVID-19 management teams have often been dominated by medical, epidemiological and virological expertise, with respondents reporting that relatively low status has been afforded to social and behavioural sciences. This was especially the case earlier in the pandemic, since when BI teams in several countries have been strengthened, and some have also been given a clearer mandate to inform the decision-making process. However, as several of the interviewees indicated, BI research is not yet visible enough, and its profile needs to be raised.

Linking BI findings to risk communication

While challenges have been identified in bringing the findings from BI into strategic or policy planning, the work has had a significant impact on different aspects of risk communication in nearly all the participating countries. Some examples are given below, whereby BI findings have:

- Helped to frame the ways in which the different recommended NPIs are presented at press conferences and in other communications. For example, based on results showing the need for more motivational communications, the authorities in one country have shifted from messaging that is instructive and directive to a more emotionally engaging approach;
- Facilitated the adaptation of some risk communication content, based on findings from qualitative analysis of social media posts and messages that have been sent to public health authorities;
- Contributed to the development of protocols for campaigns that promote specific behaviours, based on insights from behaviour change theories. This work had a major impact on testing uptake in one country, with increases in testing uptake by 60% within a few days of implementing the new communications approach;
- Provided a firm basis for communications about the (then future) COVID-19 vaccines, including through insights on population groups that are hesitant or that have concerns regarding the vaccines;
- Pointed to the need for very concrete directions from the authorities of one country, on the basis of BI observations after the first round of lockdowns had been eased. People were reportedly increasingly unwilling to continue to follow the remaining recommendations due to pandemic fatigue, so a strengthening of the messages was needed.

Other factors related to conducting BI research

Governance and coordination: A wide range of governance structures are in place in the countries, with a tendency for those countries that have conducted the most BI research to have a more clearly defined basis for the work. In one country, for example, there were strong links between the national institute of public health, the Ministry of Health and the Prime Minister's Office (each of which was conducting some sort of BI work), with coordination ongoing between the different groups so as to avoid duplication and to share findings. However, extensive BI work in a country does not always imply that there is a well-coordinated effort, with another country reporting "a problem of governance", as several different official organisations have pursued their own research agendas without fully communicating or coordinating with the others.

University-led BI research is reportedly ongoing in several of the responding countries, much of which is supported by national funding agencies. One country reported that this is neither coordinated nor organised, and as such their expertise does not contribute to the official response. In another country, the health authorities have the opportunity to add questions to university's surveys, and findings are used to inform official risk communication strategies. A third country reported that they have been seeking partnerships with university-based researchers so they can receive assistance with the analysis of the data they have collected, as they do not have the capacity to analyse it themselves.

Funding: Funding has been prioritised for conducting BI research in a minority of the participating countries, while in others it has been either available on an *ad hoc* basis (which has made longer term planning difficult) or it has been insufficient to conduct the research identified by the interviewees as necessary to respond to the circumstances. Since both the epidemiological and the social contexts have been so dynamic over the course of the pandemic, it would, we were told by several interviewees, be preferable to conduct more regular surveys, thereby avoiding gaps in the knowledge base and enabling strategies to be well-informed in this rapidly evolving situation. In these cases, interviewees argued that this uncertainty over funding may point to behavioural research being assigned a lower level of priority than some other areas of research.

Staffing: Examples were given during the interviews of behavioural research teams being strengthened early in the pandemic, and of experts who were previously working in other areas being reoriented to focus on COVID-19 behavioural research. For example, two EPIET Fellows³ had joined one data analysis team. While more staff would of course always be welcome, several countries were nonetheless managing to accomplish the data collection and analysis that they had planned. However, some interviewees reported that they were short-staffed in their BI units, with, for example, no full-time personnel at all, or team members also required to cover other projects. This inhibited the timely analysis of data and the production of well-targeted communications that could facilitate translating the findings into policy and practice.

Supporting capacity development

Several areas were identified where support in BI research from ECDC or other partner organisations was desired. The most frequently mentioned area concerned the wish, expressed by several interviewees, to feel that they were part of a wider group of experts working towards similar ends. As one interviewee indicated, there are relatively few 'champions of behavioural insights' in most Member States, which means there is no critical mass of expertise at national level to highlight the area. Thus, it would be important to develop, at regional or EU level, a sense of mutual scientific and strategic support through, for example, the provision of opportunities for national experts to exchange knowledge, ideas and experiences. This could include holding an ongoing series of webinars and/or face-to-face meetings (depending on the epidemiological situation) to facilitate exchanges about BI methodologies, good practices, and reflections on how to be more effective in bringing findings to decision-makers' attention in an actionable manner. Specific topic areas identified for this included working to counter misinformation, addressing pandemic fatigue, conducting social media analysis, promoting vaccination, and sharing risk communication materials developed on the basis of BI research.

A second area identified was to facilitate a mapping of the behavioural research being conducted in universities and other social science research institutions across the EU. A considerable amount of work is currently being undertaken on COVID-19-related behavioural research in participating countries, but this is often not coordinated, and much of the work is not connected to decision-makers. As such, it represents an inefficient and potentially ineffective investment for the countries, even though it is often supported by national funding agencies. Such a mapping exercise would be helpful for informing colleagues at national level about theoretical developments and innovative methodologies, while also providing the opportunity to create links and synergies, to identify priority areas, and to coordinate the work.

³ The European Programme for Intervention Epidemiology Training (EPIET) was created in 1995 with the objective of establishing a network of highly trained field epidemiologists in the European Union, thereby strengthening the public health epidemiology workforce at EU Member States and EEA level. See: <https://www.ecdc.europa.eu/en/epiet-euphem>

A third suggestion concerned the possibility of arranging for the synthesis of key evidence on different issues related to behavioural insights. Such work was described as becoming increasingly burdensome, since there is now so much material to review on this topic. One such area identified concerned how to motivate populations to comply with NPIs.

Conclusions and suggested next steps

The findings from this study suggest that a clearly defined link between the findings from COVID-19-related BI research and any specific policy or strategy decision in the responding countries can only rarely be identified, although several instances were described in which BI findings have provided authorities with a nuanced understanding of a given situation and they have thereby provided a platform for an evidence-informed decision-making process and for more effective implementation plans. There has been increasing recognition over the course of several previous epidemics of the potential contribution of social and behavioural sciences to outbreak control policy and to facilitating the effective implementation of interventions [16-19], so these developments are to be welcomed.

That said, the scientific committees responsible for making recommendations to decision-makers still tend to lack substantive expertise in behavioural science. Further, human and financial resources were said to have limited the capacity of the national institutions to conduct BI research in most of the participating countries. This, in turn, has limited the amount of BI research conducted, and it has also led to data being collected and then not analysed in a timely manner. Thus, the possibility to act on whatever data have been collected may have been limited.

However, in spite of the relatively low priority given to BI research with regard to policy formulation, the work has nonetheless had a significant impact on different aspects of risk communication in nearly all the participating countries. For example, BI scientists have helped to frame the ways in which different recommended behaviours have been presented to the public, they have used theoretical insights from behavioural sciences to facilitate enhanced uptake of COVID-19 testing, and they have provided direction in the messaging around COVID-19 vaccines and pandemic fatigue. In that sense, COVID-19 has provided yet further evidence [16-19] of the potential contribution of social and behavioural sciences to outbreak control, albeit to a somewhat lesser extent than would have been ideal.

It must be hoped that these successes will lay the foundation for further enhancing of national capacities for BI research in EU/EEA Member States, and that they will also help to facilitate its fuller integration into wider preparedness and response structures [19]. This process would be greatly enhanced if decision-makers themselves were supported to understand the potential value of BI, and thereby to invest in and prioritise this area.

As of early February 2021, the importance and urgency of BI research has become increasingly evident: levels of COVID-19 transmission remain high in most EU/EEA countries, new variants of SARS-CoV-2 raise concerns regarding increased transmissibility of the virus, and countries now need to prepare for an escalation in the implantation of strict NPIs [15]. Given this, as well as the time it will inevitably take for the effects of the vaccines to be felt at population level, it is difficult to predict when populations can expect a return to a more 'normal' life. Therefore, public expectations will need to be managed and people will need to be motivated to continue to comply with public health measures. This could become a growing challenge in a context of pandemic fatigue, which could be at least partially mitigated through enhanced focus on conducting high quality BI research and then acting on the findings.

Meanwhile, some suggestions have been made by the respondents in this study that could strengthen existing capacities on an interim basis:

- As a means of giving the BI teams in the Member States an opportunity to interact with peers from other countries and be part of a wider group of experts working towards similar ends, a series of webinars could be held, where ideas, expertise and experiences, as well as challenges, can be shared;
- In order to provide a clearer sense of the different actors working in this field in the different Member States, a mapping could be conducted of the social and behavioural research being conducted in universities and in other social science research institutions across the EU;
- Syntheses of published data on specific aspects of behaviour – for example, on how to better motivate the population to comply with NPIs, or to take up the COVID-19 vaccines – could have direct policy and programmatic value.

Limitations

All but one of the interviews for this study were conducted prior to the start of the COVID-19 vaccine rollout. This means that any vaccine-related content of the BI research referred to perceptions and intentions about vaccination in anticipation of an authorised vaccine being produced, rather than in relation to an actual, known vaccine that was already being used. Similarly, most of the data were collected prior to the identification of the new variants of SARS-CoV-2. Thus, both the epidemiological landscape and the available countermeasures referred to are not identical to those that are current. However, this does not change the fundamentals concerning the incorporation of BI findings into policy and risk communication.

Several of our interviewees stressed that they did not have a complete picture of all the BI research being undertaken in their respective countries, especially in terms of what may have been conducted at sub-national level or by university-based academics. It is also important to note that the ten participating countries represent their own individual experiences and cannot necessarily be seen as representative of the EU/EEA as a whole. Once again, however, the principles underlying the incorporation of BI findings into policy and risk communication – as derived from the data collected – remain the same, so the overall findings and their implications are not affected.

Finally, and perhaps most seriously, the responding countries for this study came predominantly from the western, southern and northern regions of the EU/EEA, with Eastern and Central Europe substantially under-represented. While we are aware that there is at least some BI work ongoing in this region, it is possible that those countries that have invested more in BI may have been more likely to take part in the survey than those that have invested less. The near absence of participants from Eastern and Central Europe in this study suggests that future steps towards building EU-wide capacity in BI research should include a particular focus on these countries in order to ensure that their needs are properly met.

Consulted experts

- ECDC experts (in alphabetical order): John Kinsman, Jonathan Suk, Andrea Würz
- Interviewees (in alphabetical order): Maria Koch Aabel, Pierre Arwidson, Isabelle Bonmarin, Marijn de Bruin, Tone Bruun, Maria João Forjaz, Frode Forland, Karina Godoy Ramirez, Mirjam Jenny, Susanne Jordan, Zoi Dorothea Pana, Carmen Rodriguez-Blazquez, María Romay-Barja, Jonas Sivelä, Matej Vinko
- External expert: Katrine Bach Habersaat (WHO Regional Office for Europe)
- The external expert has submitted a declaration of interest, and a review of this did not reveal any conflicts of interest.

Annex - Questions used in the interviews

1. Please state your job title and principle area of expertise.
2. Please describe the structures and capacities that are in place at national level (and, if relevant, at regional level) to conduct health-related behavioural research (COVID-19-related, or otherwise).
3. Has your country conducted any behavioural research on the community knowledge, attitudes and behaviours related to COVID-19 and to the measures that have been put in place to control the virus?
 - a. If **Yes**, please describe the research (survey, qualitative, cross-sectional, longitudinal etc., including brief methodological details), and why this particular methodological approach was taken.
 - b. If **No**, please state why no research has been conducted (then skip to question 10)
4. What have been the main challenges in this work (methodological, logistical etc.), and how have you addressed these challenges?
5. Have the results of the research been made public, and if so, where can these be found?
6. What plans are there, if any, for future research?
7. Please summarise the main findings of the research conducted to date, and in particular if there have been any especially notable trends identified over time, or differences between regions.
8. To what extent and how would you say that the findings from the behavioural research have informed the COVID-19 response in your country? What have been the facilitating factors and the barriers (including possible gaps in the research itself, or resource limitations) for this?
9. To what extent and how would you say that the findings from the behavioural research have been taken up into risk communication efforts in your country? What have been the facilitating factors and the barriers for this?
10. What would you say are the main lessons learned in your country in terms of getting the population to comply with the measures put in place to prevent the spread of COVID-19?
11. Is there any sort of support for behavioural research that you would want to have in your country that could be provided by ECDC or other partner organisations? If so, please specify what sort of support you would like to have.
12. Please give any other comments you would like to add on the subject of facilitating the use of findings from behavioural research into risk communication efforts and into policy.

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