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Institute for Planetary
Health Behaviour

**Perception, Behaviour,
Communication & COVID-19**
aka The human factor

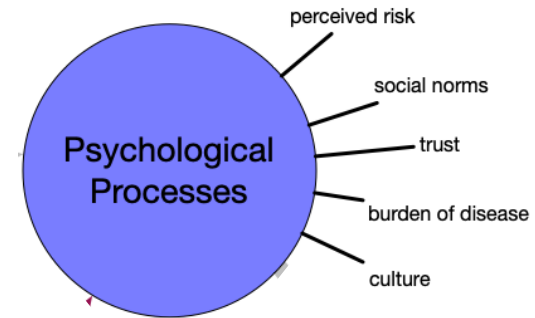
Cornelia Betsch

University of Erfurt, BNITM Hamburg

Herrenhausen Conference 2023

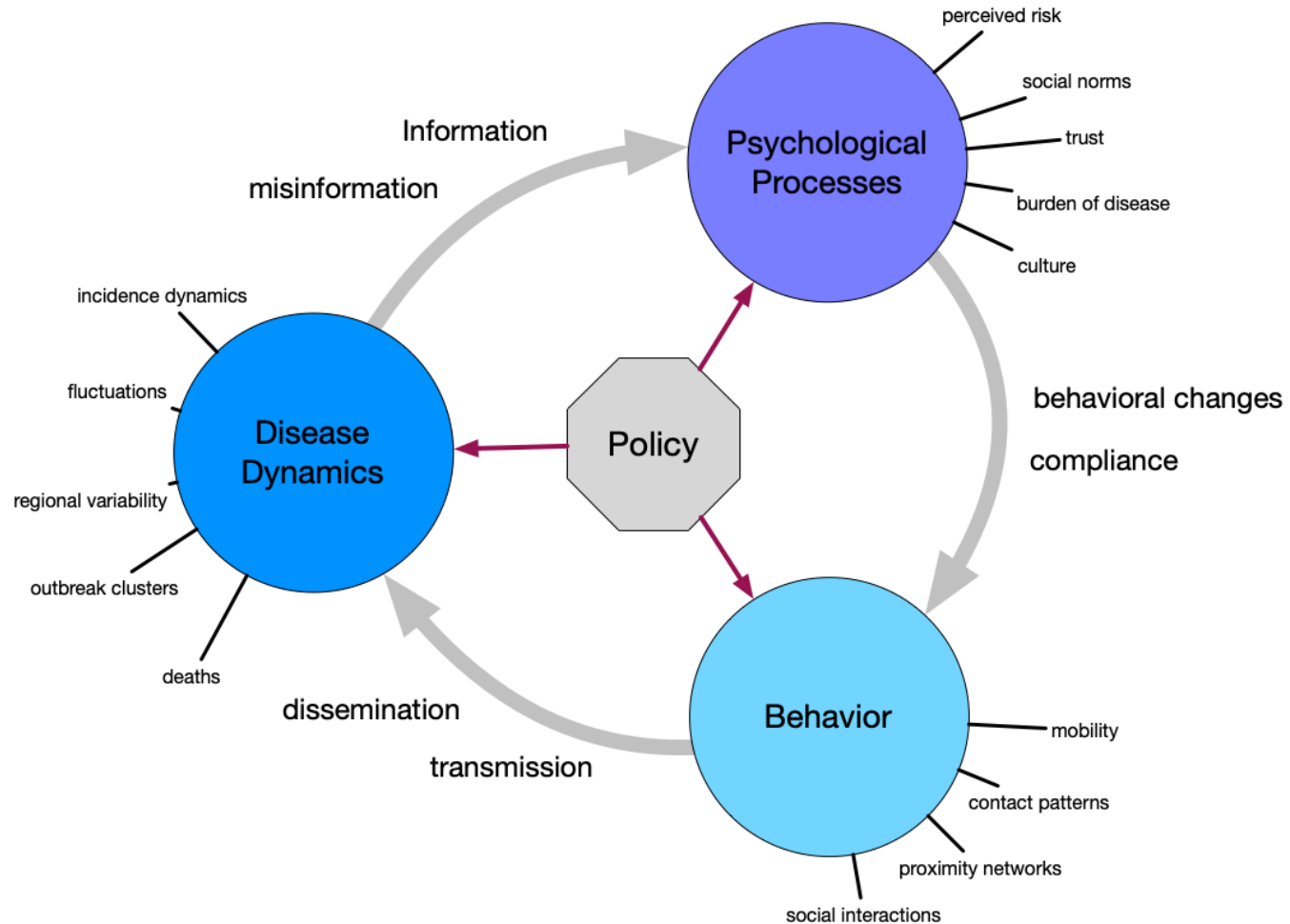
Climate crisis and systemic risks: Lessons Learned from COVID-19
June 21 - 23, 2023, Hanover, Germany

I declare that I have no conflicts of interest.



Interconnectedness

- This crisis can only be solved with large-scale behavioural change
- Change needs to be fast
- How can this be achieved?
- In our scientific understanding: How can the circle be closed?
- What do modelers know about behavior?
- How can behavioural scientists project the consequences of today's behaviour into the future?
- How can knowledge be translated into action and misinformation be corrected?
- How can policy makers and health agencies integrate knowledge about behaviour and behavioural change?



COVID-19 Snapshot Monitoring COSMO

- March 2020 – November 2022
- Weekly/Bi-weekly/monthly surveys (n ca. 1.000 per week)
- 70 waves with roughly 70.000 participants
- 40+ countries conducted similar studies following a WHO/Euro protocol based on COSMO



Correspondence

Monitoring behavioural insights related to COVID-19

The rapidly evolving coronavirus disease 2019 (COVID-19) pandemic is placing an overwhelming burden on health systems and authorities to respond with effective and appropriate interventions, policies, and messages. A critical element in reducing transmission of the virus is rapid and widespread behavioural change. Evidence shows that a perceived lack of consistency, competence, fairness, objectivity, empathy, or sincerity in crisis response in the public could lead to distrust and fear. Conversely, when the public perceives measures as having these characteristics, as well as being easily understood and communicated through trusted and accessible channels, and when the necessary services are available, people are able to...

The suggested serial, cross-sectional study allows rapid and adaptive monitoring of focal variables over time, assessment of the relations between them, and randomisation of answer options where suitable. Among others, included variables relate to demographics, protective behaviours, knowledge, perceptions, and trust. Changes in risk perceptions...

FOCUS | WORLD VIEW



Credit: Marco Borggreve

How behavioural science data helps mitigate the COVID-19 crisis

In the current absence of medical treatment and vaccination, the unfolding COVID-19 pandemic can only be brought under control by massive and rapid behaviour change. To achieve this we need to systematically monitor and understand how different individuals perceive risk and what prompts them to act upon it, argues Cornelia Betsch.

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Preregistration

COVID-19 Snapshot Monitoring (COSMO Standard): Monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the current coronavirus outbreak - WHO standard protocol

Заглавие: COVID-19 Snapshot Monitoring (COSMO): Мониторинг восприятия рисков, поведения, знаний и доверия среди населения страны для создания национальных пандемических ответных мер – руководство ВОЗ

Author(s) / Creator(s)
WHO Regional Office for Europe

Abstract / Description
In a crisis such as the 2020 outbreak of the newly emerged coronavirus, it is of utmost importance to monitor public perceptions of risk, protective and preparedness behaviours, public trust, as well as knowledge and misinformation to enable government spokespeople, the media, and health organizations to implement adequate responses. The purpose of this standard protocol for national serial cross-sectional studies is to allow rapid and adaptive monitoring of these variables over time and to assess the relations between risk perceptions, knowledge and misinformation to preparedness and protective behaviour regarding COVID-19 in each country implementing this study.

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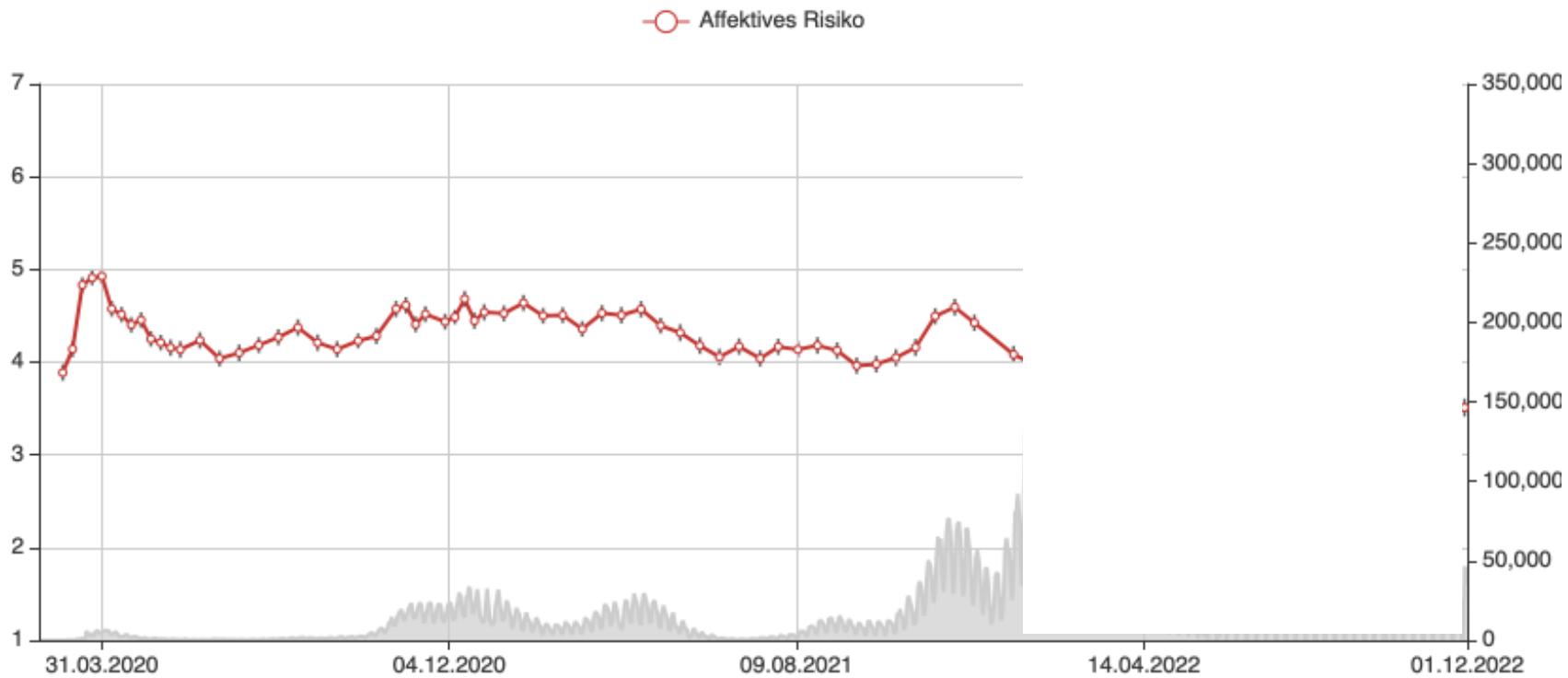
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Bernhard-Nocht-Institut für Tropenmedizin



Risk perception = necessary for protective behaviour

Risk Perception followed COVID-19 cases

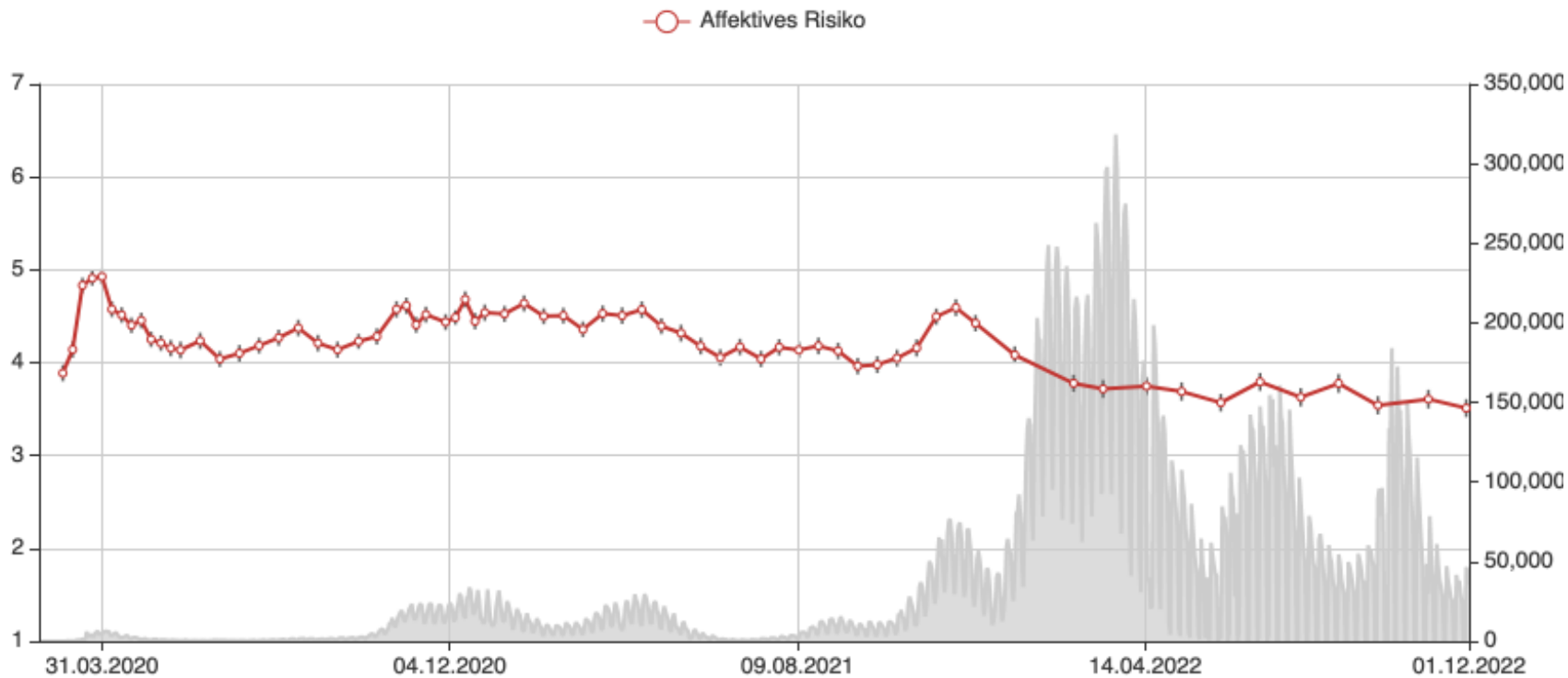


COVID-19 Snapshot Monitoring (COSMO) — www.corona-monitor.de (CC BY-SA 3.0 DE)

Mean (fear, worry, dominance)

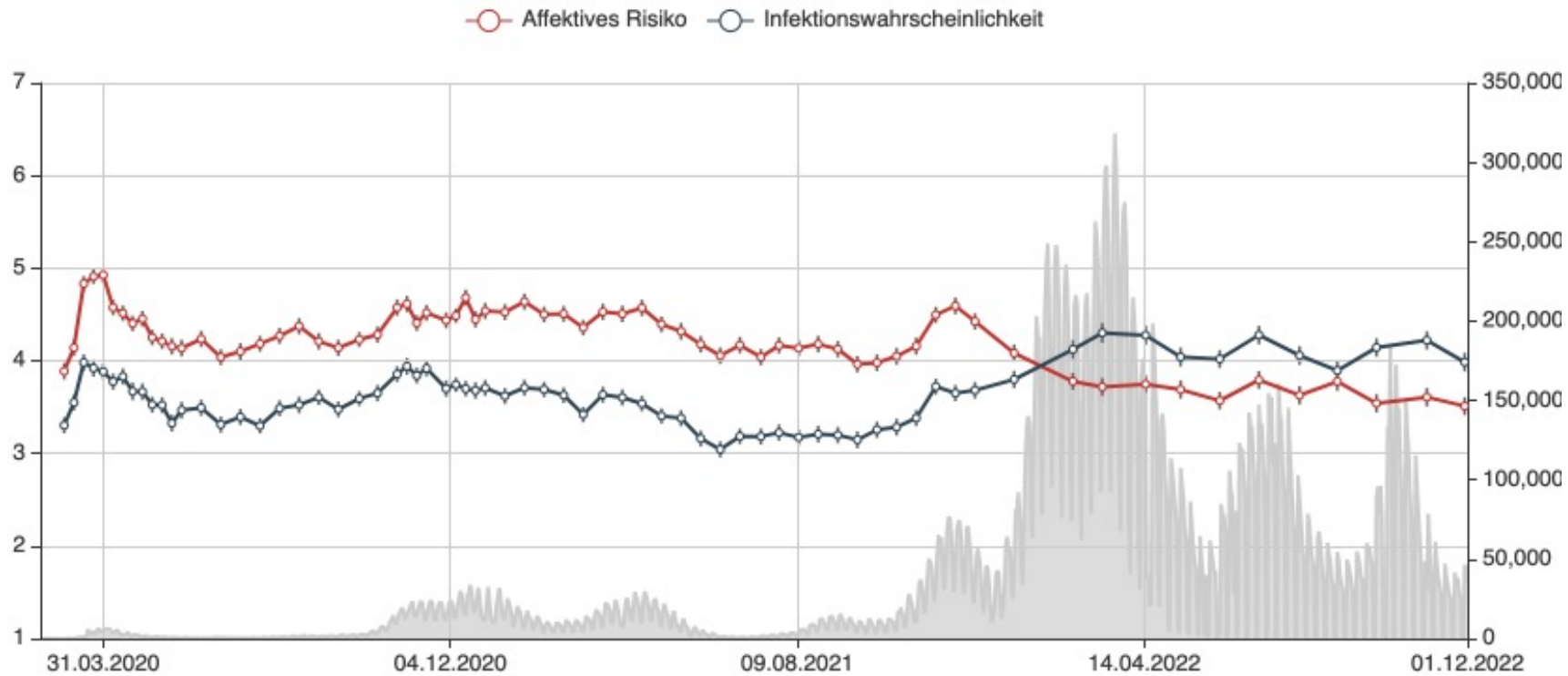


But not when the Omicron-variant occurred. What happened? Were people tired? Bored? Lost stamina?



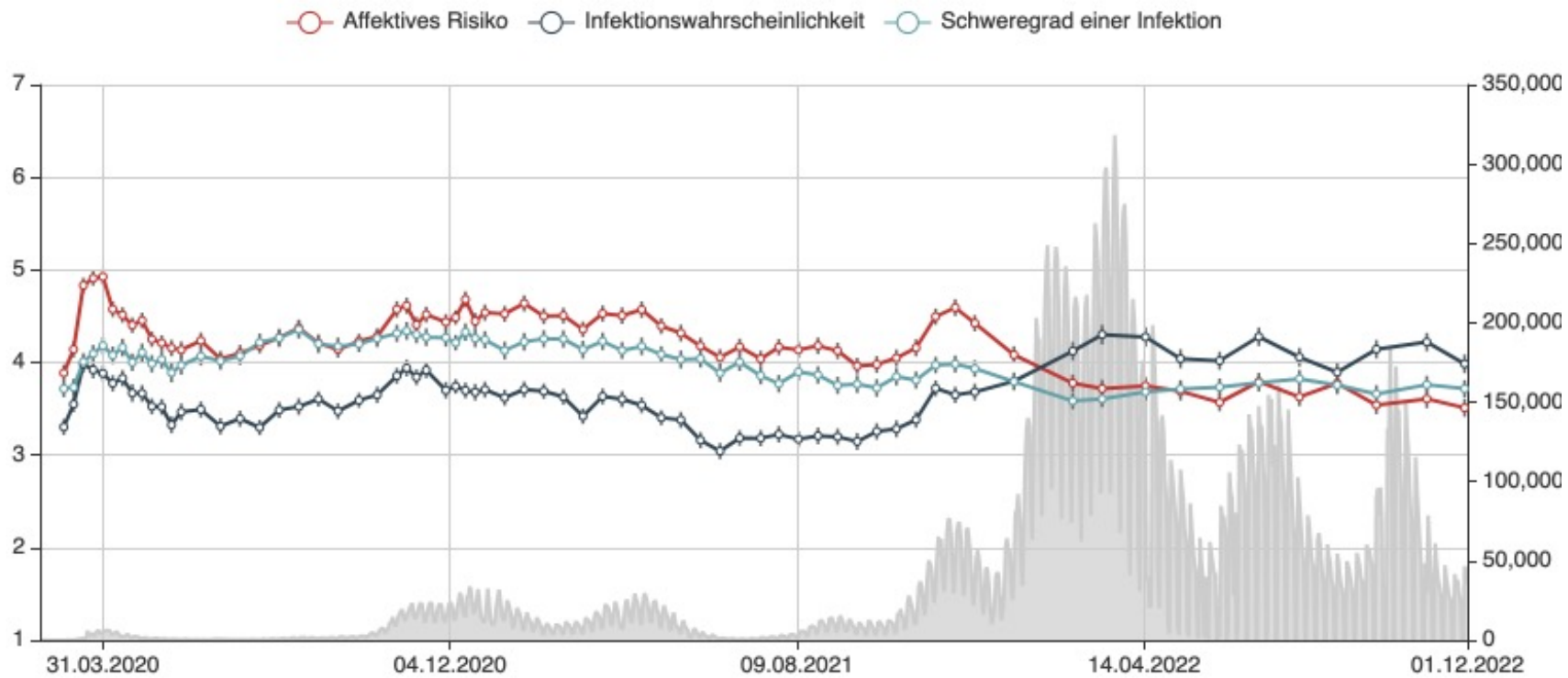
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People had increased perceptions of risk of infection during Omicron



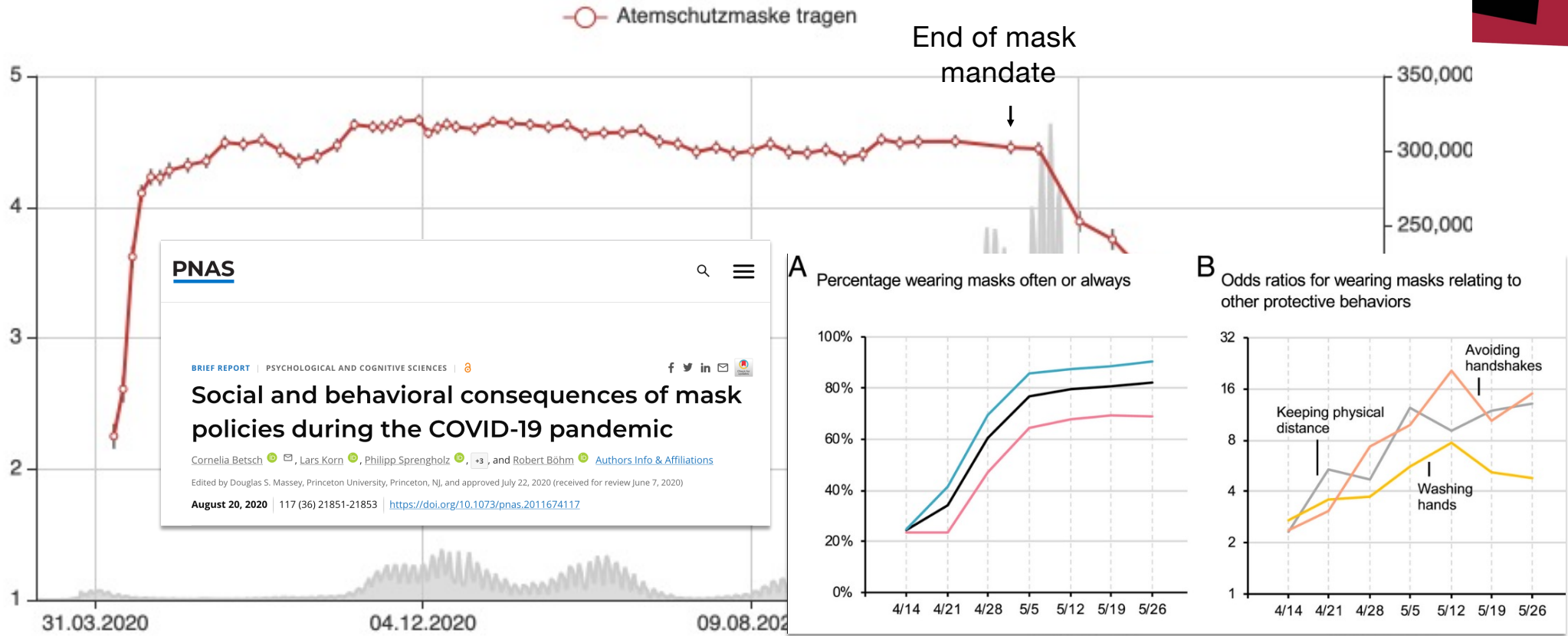
COVID-19 Snapshot Monitoring (COSMO) — www.corona-monitor.de (CC BY-SA 3.0 DE)

But decreased perceptions of severity → Things we have learnt in the beginning of the pandemic may change over time



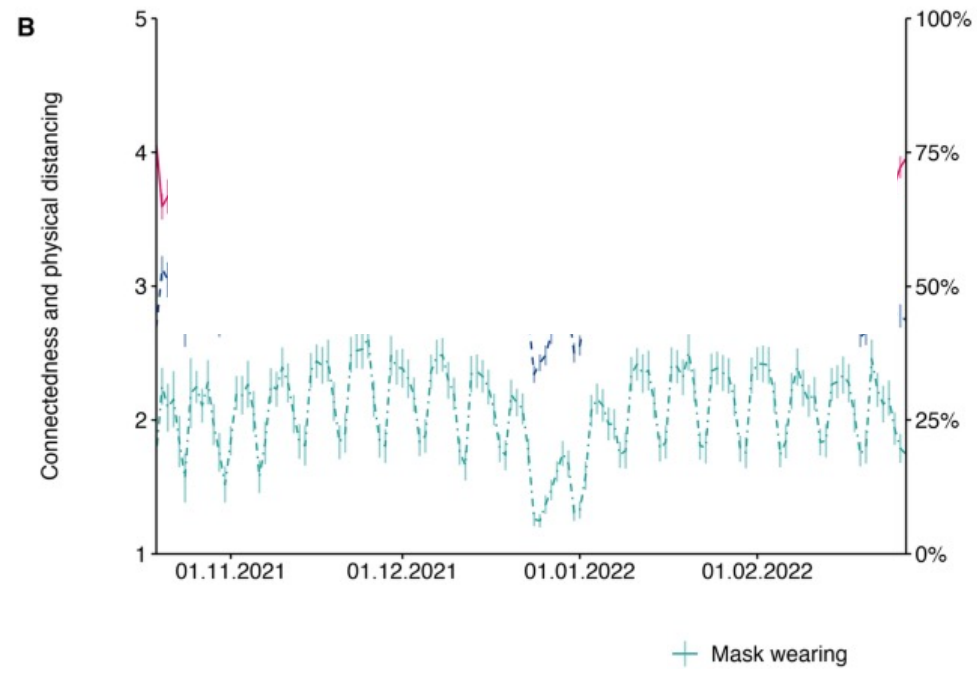
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Mask mandates changed behaviour in a fast manner

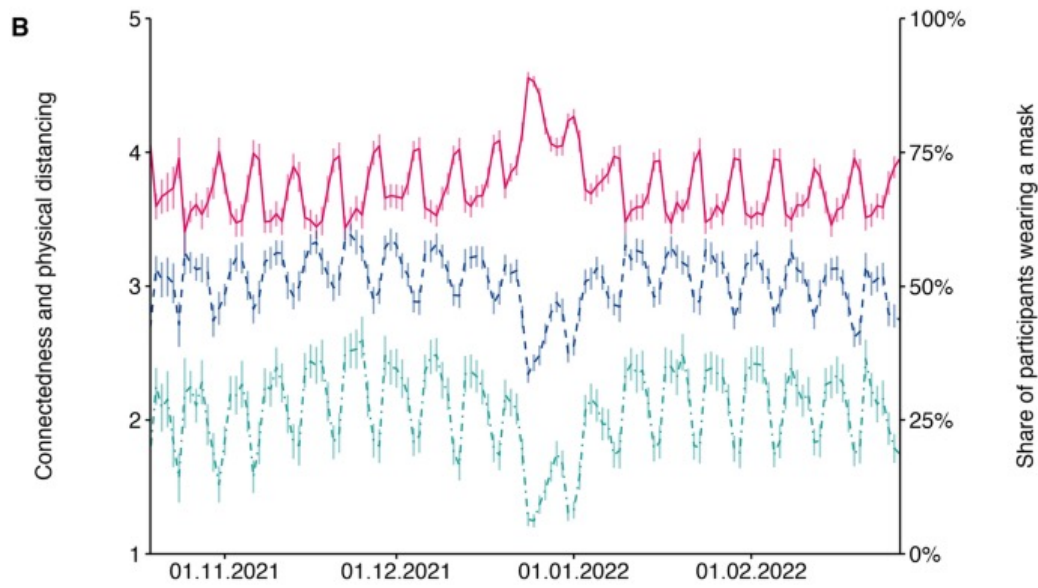
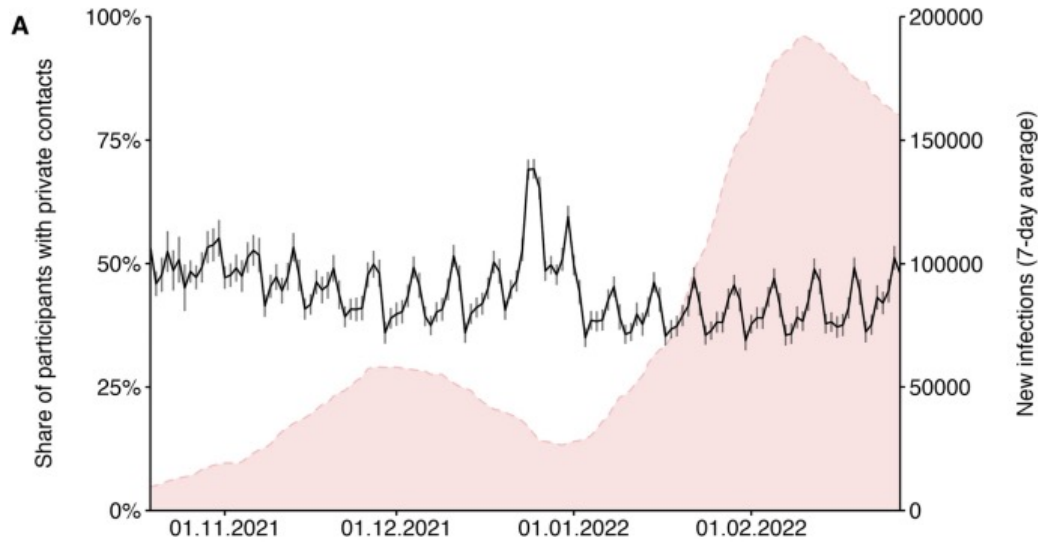


Did you privately meet with other people yesterday who did not belong to your household?

If so, did you wear a mask?

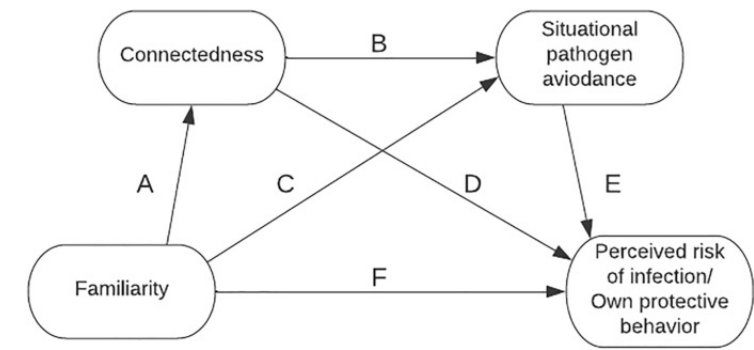


Taubert et al., 2023



+ Connectedness + Physical distancing + Mask wearing

People vary in their mask wearing behaviour – depending on whom they see



Taubert et al., 2023



Why it is valuable to include behavioural data in disease modeling

- Most epidemic models describe the dynamics of a homogeneous population in different disease stages
- Improved accuracy of predictions, better understanding of how diseases spread
- Better policy decisions about interventions and policies to control the spread of infectious diseases
- More targeted interventions by identifying specific groups or individuals who are more likely to spread or contract a disease
- Long-term impact of interventions and policies

A review and agenda for integrated disease models including social and behavioural factors

[Jamie Bedson](#), [Laura A. Skrip](#), [Danielle Pedj](#), [Sharon Abramowitz](#), [Simone Carter](#), [Mohamed F. Jalloh](#), [Sebastian Funk](#), [Nina Gobat](#), [Tamara Giles-Vernick](#), [Gerardo Chowell](#), [João Rangel de Almeida](#), [Rania ElESSawi](#), [Samuel V. Scarpino](#), [Ross A. Hammond](#), [Sylvie Briand](#), [Joshua M. Epstein](#), [Laurent Hébert-Dufresne](#) & [Benjamin M. Althouse](#) 

Nature Human Behaviour 5, 834–846 (2021) | [Cite this article](#)

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RESEARCH ARTICLE

Integrating psychosocial variables and societal diversity in epidemic models for predicting COVID-19 transmission dynamics

Viktor K. Jit¹, Saeed Peckol², Huiyang Wang, Marmaduke Woodman, Jan Fouisek, Cornelia Betsch, Lisa Felgendreff, Robert Bohn, Lau Lishahok, Ingo Zeller, Sarah Faber, Kelly Shen, Anthony Randal Morrison
Published: August 31, 2022 • <https://doi.org/10.1371/journal.pdig.0000098>

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ORIGINAL RESEARCH
Published: 13 February 2022
doi:10.1371/journal.pdig.0000098

Interplay Between Risk Perception, Behavior, and COVID-19 Spread

[Philipp Dönges](#)^{1,2}, [Joel Wagner](#)^{1,3}, [Sebastian Contreras](#)^{1,2,4}, [Emil N. Mehlner](#)^{1,5}, [Simon Bauer](#)¹, [Sebastian B. Mohr](#)¹, [Jonas Dehning](#)¹, [André Calero Valdez](#)², [Mirjam Kretzschmar](#)^{1,6}, [Michael Mäs](#)¹, [Kai Nagel](#)¹ and [Viola Priesemann](#)^{1,7*}

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Pharmaceutical and non-pharmaceutical interventions (NPIs) have been crucial for controlling COVID-19. They are complemented by voluntary health-protective behavior, building a complex interplay between risk perception, behavior, and disease spread. We studied how voluntary health-protective behavior and vaccination willingness impact the long-term dynamics. We analyzed how different levels of mandatory NPIs determine how individuals use their leeway for voluntary actions. If mandatory NPIs are too weak, COVID-19 incidence will surge, implying high morbidity and mortality before individuals react; if they are too strong, one expects a rebound wave once restrictions are lifted, challenging the transition to endemicity. Conversely, moderate mandatory NPIs give individuals time and room to adapt their level of caution, mitigating disease spread effectively. When complemented with high vaccination rates, this also offers a robust way to limit the impacts of the Omicron variant of concern. Altogether, our work highlights the importance of appropriate mandatory NPIs to maximise the impact of individual voluntary actions in pandemic control.

Keywords: COVID-19, disease modeling, infectious, human behavior, self-regulation, vaccine hesitancy, health policy and practice, Omicron variant (B.1.1.529)

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Edited by: Matej Perc, University of Meribor, Slovenia

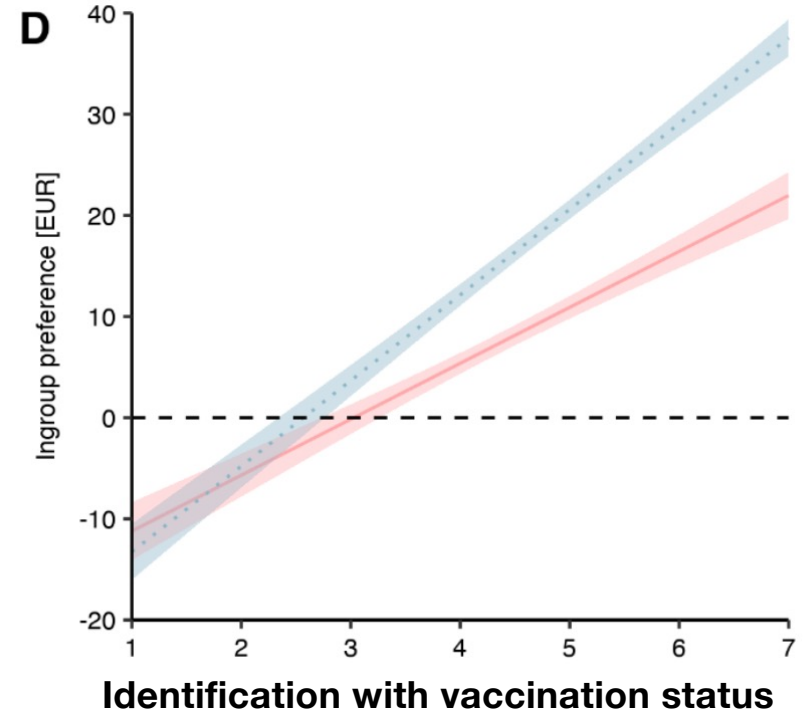
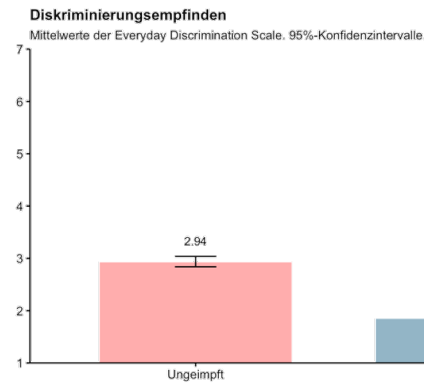
Reviewed by: Guo-Qun Sun, North University of China, China; Bonilka Tadic, Institut Jozef Stefan IJZ, Slovenia

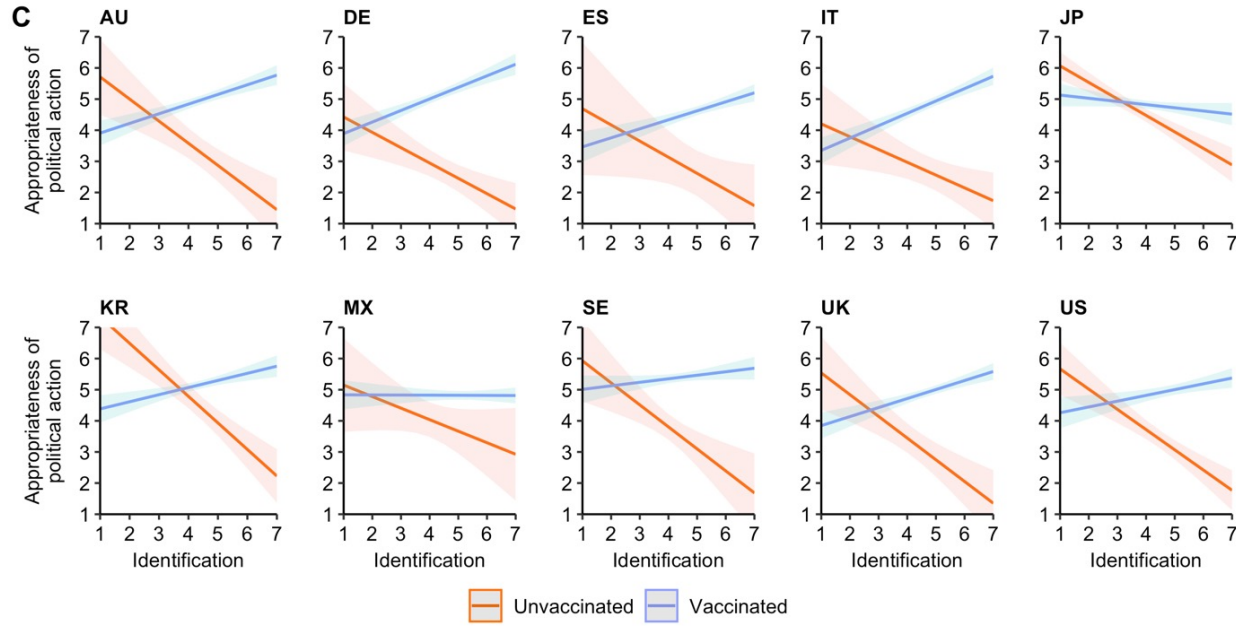
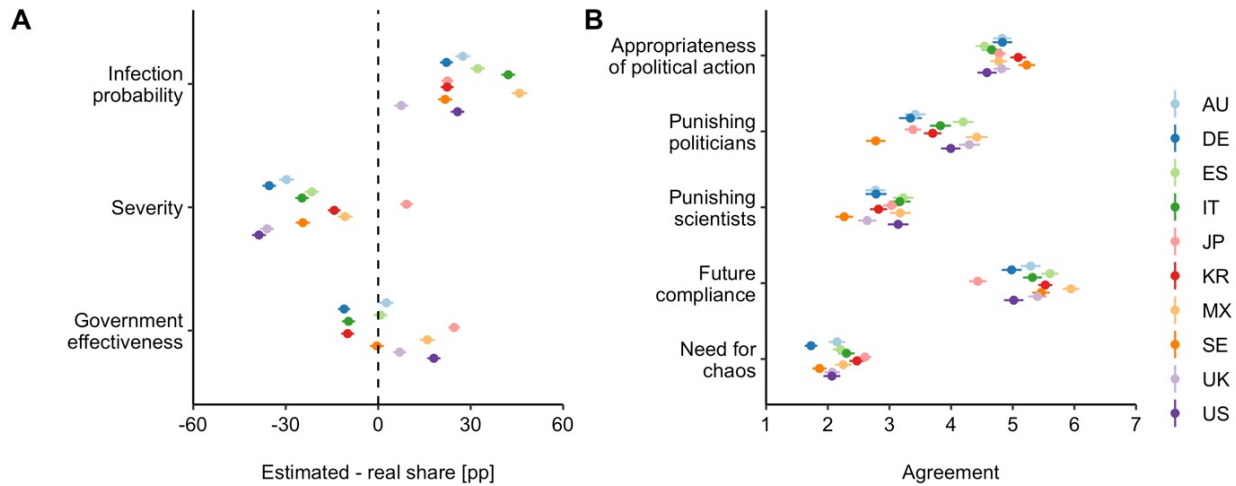
***Correspondence:** Viola Priesemann, vi.priesemann@dzf.uni-goettingen.de

[†]These authors have contributed equally to this work

Behaviour became more than just behaviour. It became an expression of a world view

- Unvaccinated feel more discriminated against
- They are actually also more discriminated against, as one experiment showed: when money was shared, there was a clear own-group preference, especially by the vaccinated (Henkel et al., 2022)
- Vaccinated people gave about 46 euros to other vaccinated people, and only about 30 euros to the unvaccinated. The difference was not as large when the unvaccinated were the decision makers.
- **Those who identify more strongly with their own vaccination status make greater differences**
- Vaccination no longer a pure health decision, but part of identity
- Situation (among other things, presumably also different rules according to vaccination status) has made for "tougher fronts"





Motivational bias in recalling the pandemic

- Strong polarization exists in how vaccinated and unvaccinated individuals perceived the ongoing pandemic situation.
- Recall of perceived risk, trust in institutions, and protective behaviors is influenced by current evaluations.
- People who strongly identifying with their vaccination status tend to exhibit greater and opposite distortions in recall.
- Biased recall persists despite incentivizing accurate recall and providing information about common recall errors.
- Bias is present in many countries

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Can information and communication do the trick?

- Too little information
 - „Be fast, have no regrets. You must be the first mover. The virus will always get you if you don't move quickly. If you need to be right before you move, you will never win.“ Mike Ryan, WHO
- To much information
 - „We're not just fighting an epidemic; we're fighting an infodemic.“ Dr. Tedros, WHO
- Wrong Information
 - „Fake news spreads faster and more easily than this virus, and is just as dangerous.“ Dr. Tedros, WHO
- Health communication is not political communication is not health communication ... (Jenny & Betsch, 2023)
- Role of journalism, Social Media (Lorenz-Spreen et al., 2023)
 - Social media related to declining political trust, increasing populism and growing polarization, more pronounced in established democracies
- Pandemic fatigue (Lilleholt in press), loss of trust (Jørgensen et al., 2022)

Climate change and human behaviour

The Earth is heating up fast because of anthropogenic climate change. Global greenhouse emissions continue to rise, while extreme weather events ravage lives, livelihoods and ecosystems. Scientists warn of impending disaster without urgent, decisive action. Human behaviour is not only the driver of climate change, but also crucial in fighting and mitigating its impacts. This Focus, a collaboration between Nature Human Behaviour and Nature Climate Change, features a broad range of Review and Opinion content on the role of human behaviour in adaptation to climate change and mitigation of its negative consequences. This new content is complemented by relevant empirical research across the Nature Portfolio journals.

Editors

[Samantha Antusch](#) & [Lingxiao Yan](#)

[Focus content](#) | [Participating journals](#)

Editorial

Editorial
16 Nov 2022

[Nature Human Behaviour](#)

Climate change and human behaviour

Climate change is an immense challenge. Human behaviour is crucial in climate change mitigation, and in tackling the arising consequences. In this joint Focus issue between *Nature Climate Change* and *Nature Human Behaviour*, we take a closer look at the role of human behaviour in the climate crisis.



Editorial
16 Nov 2022

[Nature Climate Change](#)

Behaviour as leverage

Behaviour change is essential for effective solutions to climate threats. Thus, policy-relevant behavioural science studies are needed for a shift towards human-centred climate actions.



NatureHumanBehaviour @NatureHumBehav · 12 Min.
The Earth's climate is in crisis, and we must act now. During #COP27, world leaders are discussing how to address the challenges posed by #climatechange. A new Focus issue by @NatureHumBehav and @NatureClimate highlights the role of human behaviour in adaptation & mitigation.

Comment

Large-scale behavioural data are key to climate policy

<https://doi.org/10.1038/s41562-022-01479-4>

Miriam A. Jenny & Cornelia Betsch

[Check for updates](#)

Applying behavioural science can support system-level change for climate protection. Behavioural scientists should provide reliable large-scale data that help in understanding public perceptions and behaviours. Governments should secure infrastructure for data collection and the implementation of evidence.

Addressing the planetary health crisis requires decisive global, local and individual actions built on scientific and societal consensus¹. Entire industrial and economic systems must change rapidly. A misleading focus on individual-level solutions to the climate crisis has impeded system-level changes for too long². Scientists and policy makers are becoming increasingly aware that aiming at individual behavioural changes by improving individual knowledge through better communication alone is insufficient. To ensure rapid system-level changes, strategies must instead target industries that are principal contributors to CO₂ emissions, including the fossil fuel, automobile, food, construction and (plastic) packaging industries. Politicians must make and follow through on far-reaching policy decisions³ that enable societies to mitigate and adapt to the effects of climate change. Still, these system-level changes will require individual-level changes, as the change will affect the ways in which we live and consume⁴. In democratic societies, change needs to be supported by the public, which is why scientists and policy makers need to understand public concerns and opinions.

Behavioural science is needed for system-level change

It is apparent that behavioural insights can foster individual behavioural changes; however, it may be less apparent how behavioural science can also support system-level change. System-level change means targeting the systems and environments in which individuals and organizations operate. The systems can affect behaviour by regulating, punishing, nudging or incentivizing through rules, regulations, taxes, subsidies and other political, societal, economic and legal measures. System change can, if poorly designed and poorly understood, lead to rejection of the measures, loss of popularity of governments or worse outcomes. For example, although carbon taxes have been introduced successfully in some regions, the majority of voters in Switzerland and the state of Washington in the USA rejected carbon taxes⁵, possibly due to information asymmetries⁶. Fuel taxes even triggered large protests across France in 2018. Thus, local public opinion and societal movements can hinder system-level change. To generate public support, the public must understand mitigation and adaptation strategies. Including the people's perspective in policy design can also help to ensure that people feel included, are equitably treated and are not discriminated against

economically. Here, behavioural science approaches are necessary to support the process of policy design, science communication and misinformation management⁷ (Box 1). Such evidence can be generated by large-scale data collection systems in local data observatories, as described in the next section.

Data observatories

Data observatories (Fig. 1) were partially triggered by the COVID-19 pandemic. Structures have been built to collect actionable behavioural data from various sources to inform COVID-19-related policy making and communication. These structures continuously collect large-scale data from the public through dialogue formats, social (media) listening methods and surveys⁸. Ideally, data observatories are set up within national research institutes or agencies at the intersection between science and policy making. They are equipped with a mixed toolbox of methods to collect a wide range of behavioural data. Policy makers and the public shape the research conducted in data observatories. Policy makers highlight knowledge gaps, report challenges and ask questions concerning policy making and communication to the observatories' scientists. Members of the general public, of specific target groups and of relevant professional groups participate in the various types of studies, panels and formats for dialogue. The observatories study and monitor aspects and determinants of individual and collective action to advance scientific understanding and improve policy making. The behavioural insights gained from this research informs policy making, the implementation of policies and accompanying communication campaigns. In this way, data observatories connect policy makers and the public via behavioural insights.

One task of data observatories is to conduct large longitudinal panel⁹ or serial cross-sectional studies¹⁰ on a regular basis to assess the acceptance of measures, the influencing factors and their potential changes over time. For example, during the COVID-19 pandemic, the World Health Organization (WHO)¹¹ recommended regular monitoring of risk perceptions, knowledge, attitudes, self-reported behaviours, levels of trust, psychological strain and misconceptions to identify relevant areas of intervention (for example, when knowledge about transmission modes is low, or when unvaccinated individuals did not trust the vaccines' safety) and relevant target groups (for example, identifying unvaccinated individuals, or those who are less compliant with health regulations¹²). When policy decisions are to be made (for example, regarding a mask mandate or rapid testing regulations), experimental studies or conjoint analyses can be integrated into the surveys^{13,14} to examine the social and behavioural consequences of such policies.

To help to facilitate climate action, it is crucial to collect this type of situation-specific, large-scale data. Data observatories should assess different facets of the public's readiness to act – that is, measure public support or rejection of mitigation and adaptation measures, individual willingness to act in a climate-friendly way and

nature human behaviour

Connecting policy makers and the public via behavioural insights

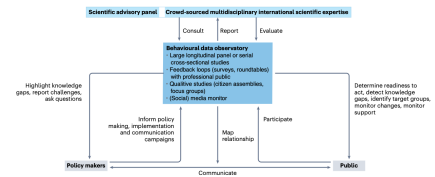


Fig. 1 | Data observatories. Data observatories connect policy makers and the public via behavioural insights, by visualizing how they operate and interface with both groups.



Summary

- Systematically collecting data on how humans perceive and act in a crisis is key as it
 - Can support targeted, effective health communication (reach important target groups, increase self-efficacy, easy to understand, relevant for action)
 - Can support policy making (and complementary communication activities)
 - Can uncover unintended effects of measures
 - Can make damages, strain, pain visible
 - Can be integrated into and improve disease modeling
- Future crises should include regular monitoring of polarization

Conclusion

- Understanding the role of human behavior in systemic risks is vital for developing strategies to mitigate and adapt to these risks effectively.
- It involves considering the cognitive, social, and psychological factors that influence decision-making, risk perception, communication, and collective action.
- By integrating behavioral insights into **risk management approaches (=structures!)**, it is possible to enhance resilience, improve response measures, and promote sustainable solutions to systemic risks.
- EQUITY! Understand who is affected before, during the crises, act!
- Challenges:
 - How can we transfer *lessons to be learnt* into *lessons learnt*?!
 - How can we debias our perceptions, or at least account for them?

Thanks for your attention 🙌

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“Science knows no country, because knowledge belongs to humanity and is the torch that illuminates the world.” Pasteur



Team Universität Erfurt und Bernhard-Nocht-Institut für Tropenmedizin
Hamburg (Leitung: Cornelia Betsch), Stand JAN 2023