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ORIGINAL ARTICLE

Factors influencing the acceptance of the measures for the containment of Covid-19

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Abstract

Aim This study examines the impact of individual factors and personal experiences with Covid-19 on how one views the pandemic and the measures against it.

Subject and methods For this, a survey was conducted and evaluated using structural equation modeling and multivariate statistics.

Results Hereby, a higher approval was found for measures associated with a high contribution to the confinement of the pandemic but with low restrictions on the people at the same time. Furthermore, the results showed that people rating the pandemic as dangerous show a higher agreement with all measures, and likewise, these people decreasingly rate the measures as worse than the pandemic itself. Also, it could be shown that, especially personal experiences like a quarantaine and personal restrictions, increased the opinion that Covid-19 is a dangerous disease. Also, people informing themselves with alternative press rated Covid-19 as less dangerous. In contrast, age and gender had no influence on the view on the pandemic and the measures against it.

Conclusion From the results, mainly two conclusions can be drawn: people can disinguish well between the benefits of single measures and personal experiences play an important role in their rating. Thus, when establishing measures in further pandemics, it might be wise to include the public's opinion in all decisions.

Keywords Covid-19 · Measures · Acceptance · Structural equation modeling

Introduction

Population restrictions are among the most widely used non-pharmaceutical interventions (NPIs) implemented by governments around the globe to stem the spread of the SARS-CoV-2 virus, and its disease Covid-19. These restrictions affect completely different areas of everyday life such as sports, cultural offerings, wearing masks, or travel restrictions. In addition, different restrictions apply in different countries and states. Thus, this study examines the acceptance of these measures in the population. Furthermore, personal factors such as age, gender, and income and their impact on people's view on the pandemic are examined.

Literature review

Some studies examined the measures against Covid-19 and their impact on the evolution of the pandemic. Vermeulen et al. (2021) used an agent-based simulation to identify the influence of different measures on the evolution of the pandemic. In their study, micro- as well as macro-level measures contribute to its control. Heiden and Buchholz (2020) also examined the impact of different parameters such as the immunity of the population and measures against Covid-19 on the evolution of the pandemic. Also here, the measures could slow down the evolution.

In contrast, Lippold et al. (2022) used a simulation with differential equations. Their results indicate that by cancelling major events, closing schools, and restricting contacts, the daily infection rate could be successfully slowed down and an uncontrolled evolution of the pandemic could be prevented. The results of Howard et al. (2021) confirmed that wearing masks reduces the transmissibility per contact in both laboratory and clinical contexts. Vrugt et al. (2021) used a simulation to show that face masks and hygiene measures could compensate for contact restrictions.

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The studies above showed that measures are helpful to contain the pandemic. However, this does not necessarily mean that the population is happy with them. Martinez-Garcia et al. (2021) used an online survey in Spain to examine the factors that influence the unwillingness to be confined during the COVID-19 pandemic. Here, the unwillingness to be in confinement increased over time and women were less likely able to sustain long-term confinement. Furthermore, their results indicate that the acceptance of confinement was mainly influenced by psychological factors at the beginning of the pandemic, while these were replaced by economic factors toward the end of their study period. Similarly, Rosman et al. (2021) figured out that concerns about the virus were positively related to the acceptance of the measures. At least in part, concerns about economic consequences correlated negatively with the acceptance of the measures. They could also partially support their statement that concerns about the virus are decreasing over time, while concerns about the economic consequences are not increasing over time.

According to the results of Collins et al. (2021), political identity is more important than personal threats when assessing the pandemic. The study by Gollwitzer et al. (2021) indicated that the duration of the lockdown affected respondents' reactions much more than the intensity or flexibility.

Brown et al. (2023) used a nationally representative sample of 496 participants during the first lockdown in the UK, and here the people were less likely engaged in healthful behavior when they perceived uncontrollable risks to their health. Kundu et al. (2021) conducted an online-based cross-sectional survey among 1765 adults in Bangladesh. Here, the respondent's knowledge of Covid-19 was high (14.49 on a scale 0..17) and their COVID-19 knowledge score was significantly associated with a lower likelihood of negative attitudes. Schmidt et al. (2023) used an online survey with 1570 participants in Germany. Here, the overall COVID-19-related health literacy was high with, an average value of 37.4 (scale 0.50). In addition, COVID-19-related health literacy and knowledge about COVID-19 were slightly lower among men, migrants, people with low subjective social status, and those with low education. Governmental requirements and recommendations were rated as more effective by women, older people, and individuals with a chronic illness. DiClemente et al. (2022) collected data on COVID-19-related knowledge, awareness and adoption of preventive practices, depression and anxiety, stress, pessimism, and tobacco and alcohol use. In their study, COVID-19 knowledge and protective practice awareness were high, and COVID-19-related anxiety and depression were associated with increased drinking and smoking.

Also, the seasonal variation in transmissibility modulates the pandemic (Neher et al. 2020). Other topics related to Covid-19 research include, e.g., Dullen et al. (2020) who have found that one month of lockdown reduces the annual economic performance by 1%, in which half of it is reduced by the measures and the other half by reduced demand and disrupted supply chains. Furthermore, Radon et al. (2020) studied infection rates in the population by blood tests.

Methodology and hypothesis

The survey was conducted in Germany from 26 December 2020 to 14 February 2021 and was distributed via the university's website and Facebook advertisements. A total of 1484 adults completed the survey. The data was evaluated with SmartPLS 3.0 and Bootstrapping was performed with 5000 samples. Figure 1 shows the main measurement model with the first 13 hypotheses. They are listed in Appendix 1 and are summarized in Table 2. The respective items (questions) of the latent variables are shown in Table 1. If no item is shown, the item equals its latent variable. All questions were measured on a quasi-metric Likert scale 1...5 (e.g., disagree, disagree on trend, neither agree nor disagree, agree on trend, agree; or: measures are exaggerated, exaggerated on trend, neither exaggerated nor appropriate, appropriate on trend, appropriate).

In this model, hypotheses 10b, 11b, 12b, and 13b are moderation effects and presume that the statements "the vaccination has not been sufficiently tested" (10b), "the vaccination is not necessary for me" (11b), "the vaccination is not necessary for all people" (12b), and "the vaccination should be given to risk patients first" (13b) only impact the approval of vaccinations if, additionally, Covid-19 is rated as dangerous.

The measurement items of the latent variables are summarized in the results section in Table 1. For the descriptive statistics, all items are shown, including those removed from the main measurement model. Formative items were removed from the model following the recommendations of Hair et al. (2021): first, all formative items with ViF > 5 were gradually eliminated due to the collinearity. These were negative testing for flights (ViF = 14), mandatory masks when shopping (ViF = 10), closed theatres, musicals, ballet, opera (ViF = 6.5), mandatory masks at doctor's practises (ViF = 5.6), closed cinemas (ViF = 5.4), no alcohol at Christmas markets (ViF = 5.4), negative testing when traveling abroad (ViF = 5.2), and mandatory masks at train stations (ViF = 5.2). Afterwards, further items were removed if their weight was not significant at the 95% level ($p > 0.05$) and, additionally, their loading was <0.5. Regarding the Covid-19 measures, only the item "no father's presence when giving birth" was removed ($p = 0.4$, loading = 0.4). Further items to be removed here belonged to the "affectedness" (wearing masks ($p = 0.9$, loading = 0.3); limited travel possibilities ($p = 0.6$, loading = 0.4)) and "personal restrictions" (limited travel possibilities ($p = 0.7$, loading = 0.4); limited visiting of people in hospitals ($p = 0.7$, loading = 0.4)).

After evaluating the main measurement model, the impact of the respondent's age, gender, education, city size, state/

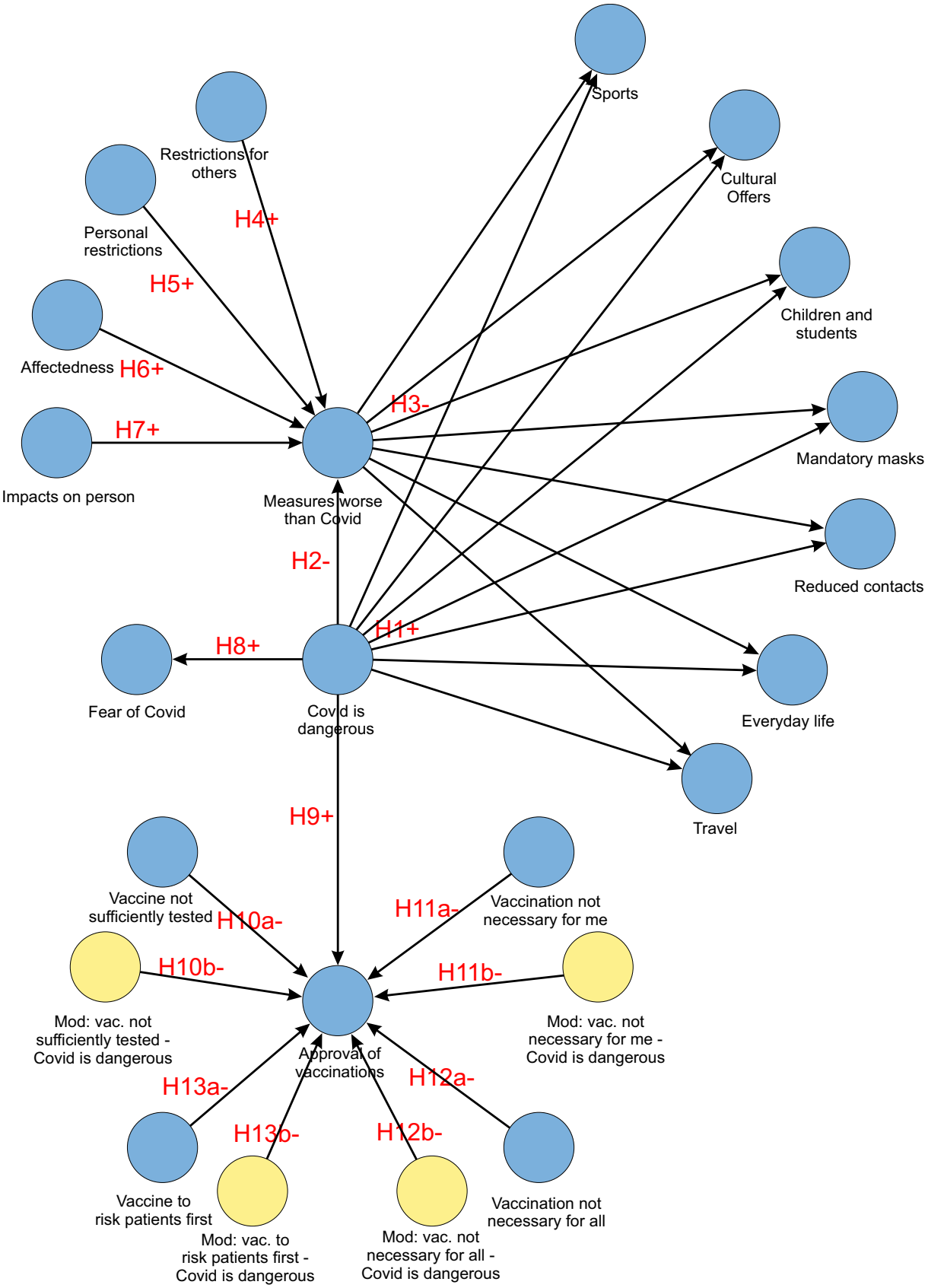

Fig. 1 Measurement model including the first 13 hypotheses. + and – signs indicate a positive or negative correlation, respectively

Table 1 Measures and their acceptance in the population on a scale 1...5

Latent	Measure	Approval	Loading	Weight
Sports	Closed gyms	3.0	0.94	0.37
	No club training	3.0	0.95	0.43
	Closed sports facilities	2.7	0.93	0.27
Cultural offers	Closed clubs and discos	3.9	0.86	0.17
	Spectator sports without spectators	3.6	0.79	0.12
	No concerts	3.5	0.82	0.01*
	Registering in restaurants	3.4	0.78	020
	Closed public baths	3.3	0.88	0.17
	No christmas markets	3.2	0.87	0.07*
	No alcohol on christmas markets	3.2	removed	
	No church services	3.1	0.79	0.10
	Closed theaters, musicals, ballet, opera	3.0	removed	
	Closed cinemas	2.8	removed	
	No alcohol in public	2.8	0.77	0.15
	Closed museums	2.6	0.75	0.04*
	Closed restaurants	2.3	0.82	0.21
	Closed zoos	2.3	0.72	0.00*
Children and students	Online teaching at universities	3.5	0.83	0.16
	Seperating groups in kindergartens	3.4	0.81	0.13
	Alternating operation of schools	3.3	0.76	0.09*
	Online exams at universities	3.3	0.76	0.02*
	Extended christmas holidays in schools	3.2	0.77	0.11
	Wearing masks in schools from 5th grade	3.1	0.91	0.32
	Online teaching in schools from 5th grade	2.8	0.81	0.04*
	Wearing masks at schoolyards	2.8	0.85	0.13
	Closed kindergartens	2.8	0.78	0.00*
	Kids can meet only one friend	2.5	0.81	0.21
	Closed playgrounds	2.1	0.70	0.03*
Masks	Mandatory masks at nursing homes	4.3	0.78	0.12
	Mandatory masks at doctor's practise	4.2	removed	
	Mandatory masks in public transport	4.0	0.91	0.43
	Mandatory masks when shopping	3.9	removed	
	Mandatory masks at train stations	3.6	removed	
	Mandatory masks in public downton	3.0	0.92	0.56
Reduced contacts	Negative test in nursing homes	3.7	0.74	0.24
	Reduced visits in nursing homes	3.3	0.76	0.12
	Privately max ten people from two households	3.3	0.89	0.20
	Reduced visits in hospitals	3.2	0.71	0.02*
	Privately max five people from two households	2.9	0.91	0.40
	Curfews 20–5 h	2.1	0.75	0.14
	No visits in hospitals	2.1	0.64	0.03*
	Exit restrictions	2.1	0.74	0.10*
	No father's presence when giving birth	1.6	removed	

Table 1 (continued)

Latent	Measure	Approval	Loading	Weight
Everyday life	Quarantine for infected people	4.3	0.73	0.05*
	Desinfecting hands at doctor's practises, schools, shops	4.0	0.72	0.03*
	Quarantine after contact with infected people	3.8	0.83	0.19
	No sexual services	3.6	0.67	0.06*
	Mandatory homeoffice where possible	3.6	0.83	0.19
	Reduced number of people in shops	3.4	0.88	0.23
	Mandatory hair washing at barber shops	2.5	0.61	0.03*
	Reduced sales areas in large shops	2.5	0.67	0.02*
	Closed barber and similar shops	2.4	0.79	0.20
	Measuring temperature at barber shops	2.4	0.67	0.15
	Closed shops except for daily needs	2.3	0.80	0.13*
Travel	Negative testing for cruises	3.9	0.84	0.35
	Negative testing for flights	3.8	removed	
	Negative testing for foreign travel	3.6	removed	
	Quarantine for people entering from another country	3.3	0.81	0.13
	Hotels closed for tourism	2.8	0.88	0.41
	Flights only for vaccinated people	2.4	0.80	0.29

The measures are arranged by their latent variables. Within these clusters, measures are sorted according to their approval rate (resp. highest on top). Furthermore, their loadings and weights are shown. Weights marked with "*" are not significant at the 95% level

country, employment situation, household income, information sources, and personal experiences with Covid-19 on their opinions were evaluated using ANOVAS and t-tests. For this, the factor values of the latent variables were calculated with the loadings of their items. The corresponding hypotheses are shown in the results section and Appendix 1.

Results

Descriptive statistics

The descriptive results, showing the average approval of the respective statements, are summarized in Table 1. The statements are grouped according to the structural equation model shown in Fig. 1. Additionally, the loadings and weights with their respective latent variables are shown, and whether the variable was removed from the model due to low values.

The highest approval was for "quarantine for infected people," "disinfecting hands when entering doctor's practises, schools and shops" and for "wearing masks" at old people's and nursing homes, doctor's practises and in public transport vehicles. In contrast, the lowest approval was found for curfews 20–5 h, prohibited visits in hospitals, closed playgrounds, and prohibited father's presence when giving birth. These results are obvious as the approved measures show a relatively high contribution to the pandemic control with low limitations.

Structural equation model

The results of the structural equation model are shown in Fig. 2 and Table 2. Further values are shown in Appendix 2, while the evaluation of the latent variables with their reflective or formative items is shown in Appendix 3.

It can be seen that the following hypotheses are supported: the opinion that Covid is dangerous increases the support for all measures (H1) and decreases the opinion that the measures are worse than Covid (H2). Likewise, the opinion that the measures are worse than Covid reduces the support for all measures (H3). Furthermore, an increasing approval that the measures are a restriction for all people (H4) and the respondents themselves (H5) increase the opinion that the measures are worse than Covid itself. This indicates that personal restrictions have a higher impact than the restrictions for other people. In contrast, being more affected by the measures (H6) and feeling an increasing impact on one's own life situation, fitness, psyche, and job situation (H7) do not increase the opinion that the measures are worse than Covid itself.

An increasing approval that Covid is dangerous also increases the fear of the disease (H8) and the approval of vaccinations (H9). Increasing opinions that the vaccines have not been adequately tested (H10) and that vaccination is not necessary for the person themselves (H11) decrease the support of vaccinations and there is also a moderating effect of the classification of Covid as dangerous on this

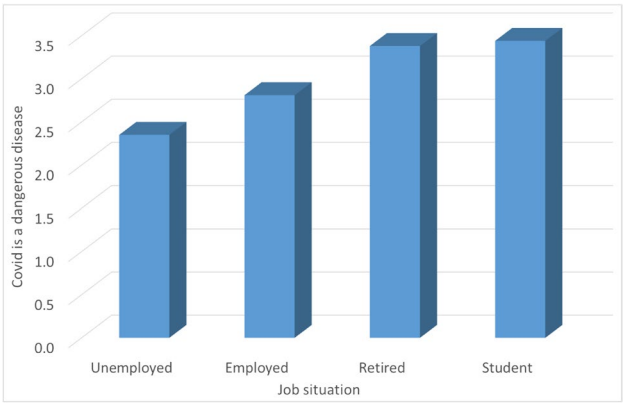

Fig. 2 Influence of the employment situation on the approval that Covid-19 is a dangerous disease

dependency. In contrast, the opinion that the vaccination is not necessary for all people reduces the approval of vaccinations (H12+), but there is no moderating effect on the classification of Covid as dangerous (H12–). Furthermore, the opinion that risk patients should be vaccinated first does not affect the approval of vaccinations. Also, no moderating effect with the classification of Covid as dangerous can be observed here (H13).

Hypotheses with ANOVAs and t-tests

In addition, t-tests and ANOVAs were used to check whether age and gender have an impact on the life situation, fitness, psyche, ratings if Covid is dangerous and the measures are worse than Covid, the fear of Covid, the ratings on personal restrictions and restrictions for others, the respondents affectedness, the impact on the person and the opinion on the measures against Covid (H14). No impact could be found here (all $p > 0.05$). Likewise, an influence of the respondent's city size and state did not show an influence on the approval that Covid is a dangerous disease (H15; city size $p = 0.147$ and for all states $p > 0.05$).

In contrast, people with higher education increasingly support that Covid is a dangerous disease (H16). Those who left school

Table 2 The first 13 hypotheses and their coefficients. Findings are supported if the algebraic sign of the path coefficient matches the causality of the hypothesis and, additionally, $f^2 > 0.02$

H1+	Covid is dangerous	Sports	0.425	0.175	Yes
H1+		Cultural offers	0.549	0.438	
H1+		Children and students	0.607	0.486	
H1+		Mandatory masks	0.581	0.373	
H1+		Reduced contacts	0.548	0.401	
H1+		Everyday life	0.527	0.390	
H1+		Travel	0.506	0.257	
H2–	Covid is dangerous	Measures worse than Covid	–0.48	0.435	Yes
H3–	Measures worse than Covid	Sports	–0.415	0.167	Yes
H3–		Cultural offers	–0.365	0.193	
H3–		Children and students	–0.288	0.109	
H3–		Mandatory masks	–0.281	0.087	
H3–		Reduced contacts	–0.353	0.167	
H3–		Everyday life	–0.383	0.206	
H3–		Travel	–0.339	0.115	
H4+	Restrictions for others	Measures worse than Covid	0.178	0.047	Yes
H5+	Personal restrictions	Measures worse than Covid	0.229	0.056	Yes
H6+	Affectedness	Measures worse than Covid	0.011	0.000	No
H7+	Impacts on person	Measures worse than Covid	–0.108	0.030	No
H8+	Covid is dangerous	Fear of Covid	0.729	1.133	Yes
H9+	Covid is dangerous	Approval of vaccinations	0.455	0.316	Yes
H10a–	Vaccine not sufficiently tested	Approval of vaccinations	–0.302	0.264	Yes
H10b–	Mod: vac. not suf. tested – Covid dangerous		–0.153	0.064	Yes
H11a–	Vaccination not necessary for me	Approval of vaccinations	–0.268	0.135	Yes
H11b–	Mod: vac. not necessary for me – Covid dangerous		–0.157	0.051	Yes
H12a–	Vaccination not necessary for all	Approval of vaccinations	–0.178	0.028	Yes
H12b–	Mod: vac. not necessary for all – Covid dangerous		–0.018	0.000	No
H13a–	Vaccine to risk patients first	Approval of vaccinations	0.052	0.005	No
H13b–	Mod: vac. to risk patients first – Covid dangerous		–0.101	0.013	No

without a full high school degree supported this statement on average with 2.54 while those who completed high school or university rated an average of 3.23 (scale 1...5; $p < 0.000$).

Also, the employment situation influences the agreement that Covid is a dangerous disease (H17), as shown in Fig. 2 ($p < 0.000$).

In contrast, an impact of the household income on the approval that Covid is a dangerous disease (H18) could not be verified ($p = 0.117$). However, the respondent's sources on information show an impact on the approval that Covid is a dangerous disease (H19). The results are summarized in Fig. 3 and show that people reading alternative press in particular are sceptical that Covid is dangerous. The p-values are information from TV ($p < 0.000$), radio ($p = 0.004$), newspapers (0.007), internet except social networks ($p = 0.013$), social networks ($p < 0.000$), friends ($p < 0.000$), and alternative press ($p < 0.000$).

Likewise, people who suffered a financial loss from the measures increasingly state that the measures are worse than Covid itself (H20, $p < 0.00$). The results are summarized in Fig. 4.

In contrast, the hypothesis that people who received financial support to compensate for a loss are less likely to state that the measures are worse than Covid itself (H20) could not be verified ($p = 0.23$).

The hypothesis that people knowing a person who has tested positive increasingly state that Covid is a dangerous disease (H22) could be verified ($p < 0.00$). Here, the approval values are 2.37 (people not knowing a person who has tested positive) and 3.14 (people knowing a person who has tested positive).

In contrast, the hypothesis that people who had contact with people who tested positive increasingly state that Covid is a dangerous disease (H23) could not be verified ($p = 0.924$).

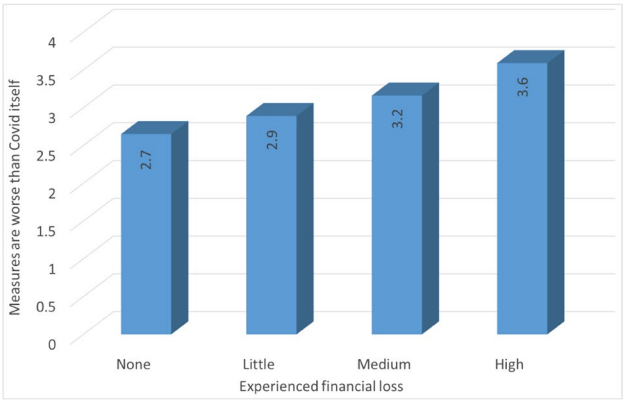

Fig. 4 Impact of a personal financial loss on the opinion that the measures are worse than Covid itself

The hypothesis that people who were in quarantine increasingly state that Covid is a dangerous disease (H24) could be verified ($p < 0.00$). (Without quarantine 2.74, with quarantine 3.47.)

In contrast, the hypothesis that risk patients increasingly state that Covid is a dangerous disease (H25) could not be verified ($p = 0.552$).

Summary

This study examined the impact of personal experiences with Covid-19 as well as personal factors on the perception of the Covid-19 pandemic. A higher level of approval was found for measures with a major contribution to containing the pandemic with low restrictions on the people.

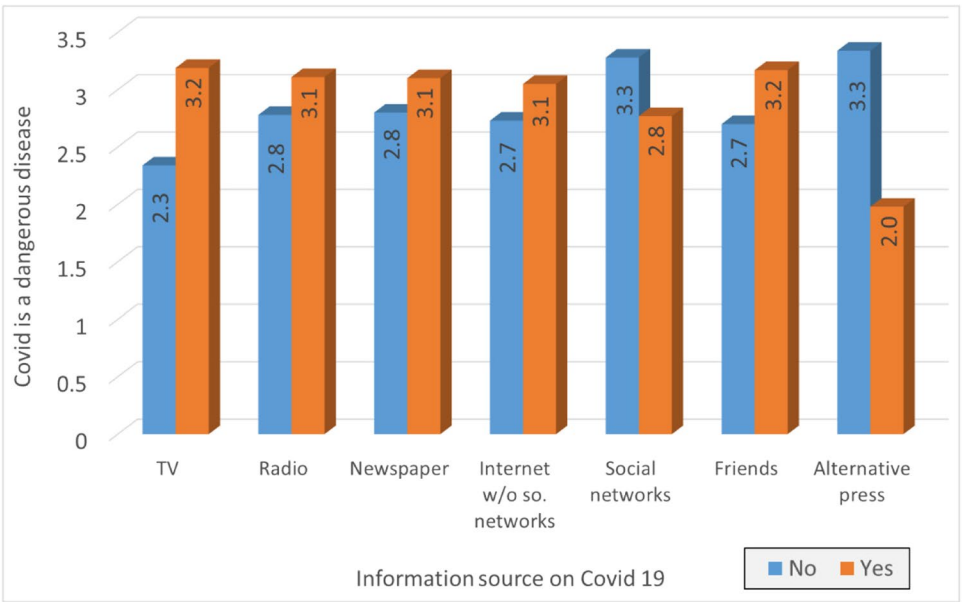

Fig. 3 Impact of the information sources on the approval that Covid is a dangerous disease

In addition, the evaluation of the structural equation model showed that people classifying the pandemic as dangerous show a higher level of agreement with all measures and also rate the measures as worse than the pandemic itself. It was also shown that personal experiences in particular such as a quarantine and personal restrictions changed the personal opinion. Age and gender, on the other hand, had no influence on the view of the pandemic.

Policy

These results could be used for the assessment of restrictions as it might be helpful to consider public opinion to increase policy acceptance.

Further investigations

Another area of investigation could be a similar survey to determine the evolution of people's opinions after the pandemic. The influencing factors could also be considered here. Furthermore, a comparison between people's opinions and simulations of the measures could lead to beneficial results.

Appendix 1

In the following, the hypotheses shown in Fig. 1 are written out:

H1+: Increasing approval that Covid is a dangerous disease increases the approval on all the measures against it.
H2–: Increasing approval that Covid is a dangerous disagree decreaeses the opinion that the measures are worse than the disease itself
H3–: Increasing approval that the measures against Covid are worse than the disease itself decreases the approval of all measures against Covid.
H4+: Increasing approval that the measures are a restriction for all people increases the opinion that the measures are worse than Covid itself
H5+: Feeling more restricted by the measures increses the opinion that the measures are worse than Covid itself
H6+: Being more affected by the measures increases the opinion that the measures are worse than Covid itself
H7+: An increasing impact on the people's life situation, fitness, psyche and job situation increases the opinion that the measures are worse than Covid itself
H8+: Increasing approval that Covid is a dangerous disease increases the fear of the disease.
H9+: Increasing approval that Covid is a dangerous disease increases the approval of vaccinations.
H10a–: An increasing opinion that the vaccines have not been sufficiently tested decreases the approval of vaccinations.
H10b–: A moderating effect between the testing of the vaccines and the classification of Covid as dangerous decreases the approval of vaccinations.
H11a–: An increasing opinion that the vaccination is not necessary for the person itself decreases the approval of vaccinations.
H11b–: A moderating effect between the personal necessity of the vaccination and the classification of Covid as dangerous decreases the approval of vaccinations.
H12a–: An increasing opinion that the vaccination is not necessary for all people decreases the approval of vaccinations.
H12b–: A moderating effect between the general necessity of the vaccination and the classification of Covid as dangerous decreases the approval of vaccinations.
H13a–: An increasing opinion that risk patients should be vaccinated first decreases the approval of vaccinations.
H13b–: A moderating effect between the primarily vaccination of risk patients and the classification of Covid as dangerous decreases the approval of vaccinations.

Furthermore, the following hypotheses are not shown in Fig. 1, as they are not part of the structural equation model but have been evaluated afterwards with ANOVAs and t-tests.

H14: Age and gender have an impact on the life situation, fitness, psychis, the ratings if Covid is dangerous and the measures are worse than Covid, the fear of Covid, the ratings on personal restrictions and the restriction for others, the respondents affectedness and the impacts on the person and the opinion regarding the measures against Covid.
H15: The respondent's city size and state/country have an impact on the approval that Covid is a dangerous disease.
H16: Higher educated people increasingly approve that Covid is a dangerous disease.
H17: The employment situation has an impact on the approval that Covid is a dangerous disease.
H18: The household income has an impact on the approval that Covid is a dangerous disease.
H19: The respondent's information sources on Covid have an impact approval that Covid is a dangerous disease.
H20: People experiencing a financial loss due to the measures increasingly state that the measures are worse than Covid itself.
H21: People who got financial support to compensate a loss decreasingly state that the measures are worse than Covid itself.
H22: People knowing a positively tested person increasingly state that Covid is a dangerous disease.

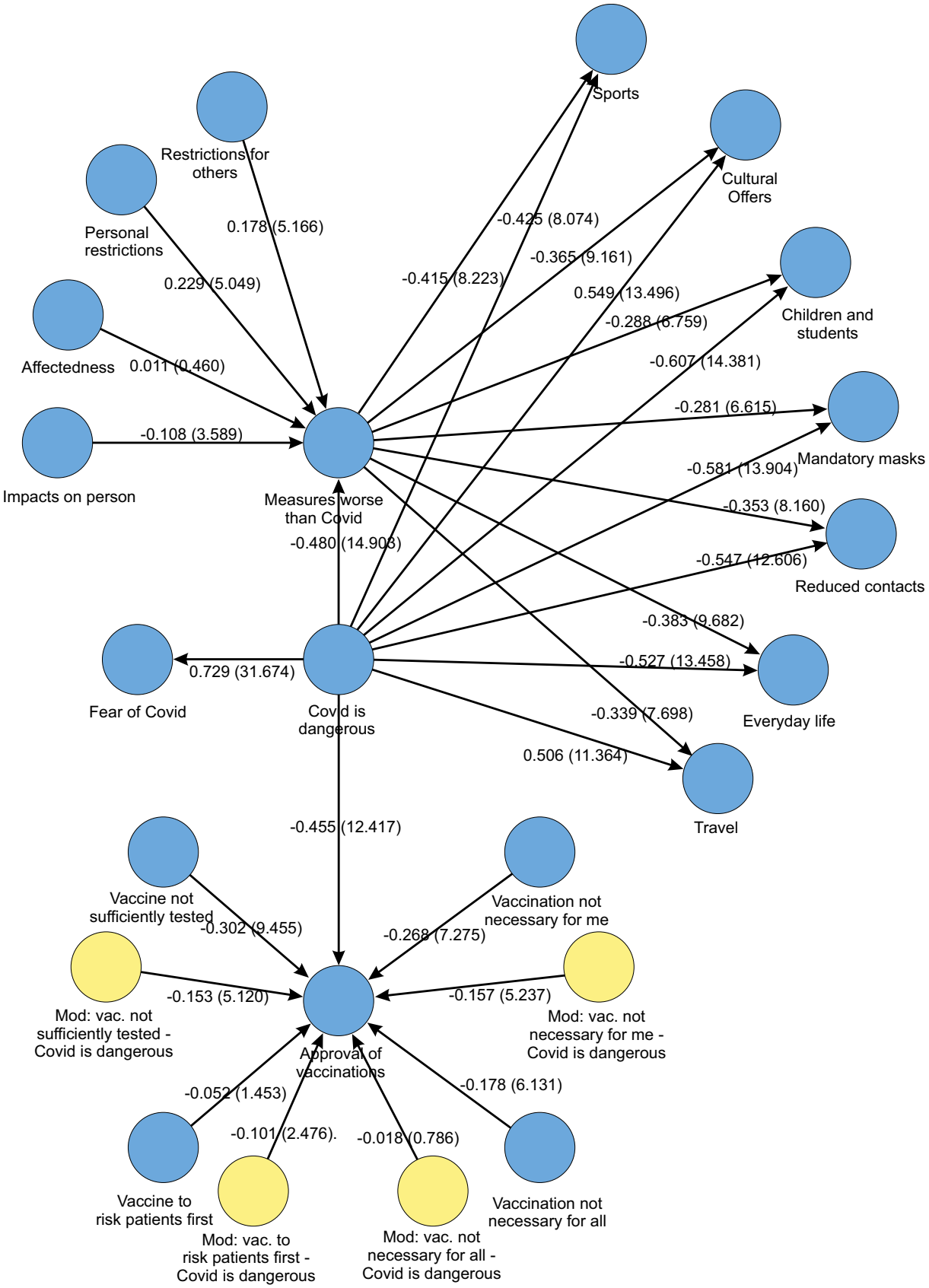

Fig. 5 The structural equation model with its path coefficients and and t-values for the dependencies and R^2 for the explanation of the latent variables

H23: People who had contact with positively tested person increasingly state that Covid is a dangerous disease.
H24: People who had been in quarantine increasingly state that Covid is a dangerous disease.
H25: Risk patients increasingly state that Covid is a dangerous disease.

Appendix 2

In Fig. 5, the main measurement model with its path coefficients, t-values, and R^2 is shown. For clarity, the items are not included here.

Table 3 Formative latent variables and their items with loadings and weights

Latent	Measure	Loading	Weight
Impact on person	Impact on physique/fitness	0.71	0.39
	Impact on life situation	0.84	0.49
	Impact on psychis	0.85	0.37
Affectedness	Visiting relatives in nursering homes	0.64	0.39
	Closed cinemas, theatres, baths	0.71	0.33*
	Closed restaurants, clubs	0.65	0.26*
	Closed sports facilities	0.74	0.46
Restrictions for others	Closed cinemas, theatres, baths	0.74	0.11*
	Closed restaurants, clubs	0.76	0.12*
	Closed sports facilities	0.76	0.22
	Mandatory masks	0.92	0.65
	Limited travel possibilities	0.66	0.09*
Personal restrictions	Closed cinemas, theatres, baths	0.63	0.06*
	Closed restaurants, clubs	0.72	0.35
	Closed sports facilities	0.54	0.14
	Mandatory masks	0.90	0.70

Weights marked with a "*" are not significant at the 95% level

Table 4 Reflective latent variables and their items with loadings, construct reliabilty, average variance extracted (AVE), and item reliability

Latent	Item	Loading	Construct rel.	AVE	Item rel.
Covid is dangerous	Classification of the pandemia	0.90	0.46	0.68	0.81
	Easing restrictions at Christmas	–0.79			0.62
	Bulk testing	0.79			0.62
Measures worse than Covid	Measures worse than Covid	0.89	0.86	0.76	0.78
	Authorities doing good work	0.86			0.74
Fear of Covid	Fear of suffering from Covid	0.97	0.97	0.94	0.95
	Fear of dying of Covid	0.97			0.94
Approval of vaccinations	Compulsory vaccination	0.77	0.87	0.70	0.59
	I plan to get vaccinated	0.88			0.78
	Privileges for vaccinated people	0.85			0.73

Appendix 3

In Table 3, the (formative) items of the latent variables "impact on person," "affecteness," "restrictions for others," and "personal restrictions" are shown with their respective loading and weight. While all show a sufficient loading, not all of their weights are significant.

In Table 4, the (reflective) items of the latent variables "Covid is dangerous," "measures are worse than Covid," "fear of Covid," and "approval of vaccinations" are shown with their respective loading and item reliability as well as the construct's reliability and average variance extracted (AVE). It can be seen that all items contribute sufficiently to their latents.

Authors' contributions BK: study design, data collection, data analysis, interpretation of results, writing and editing of manuscript.

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Declarations

Ethics approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent to participate Informed consent was obtained from all individual adult participants included in the study; children did not take part in the study.

Conflicts of interest The authors declare they have no conflict of interest.

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