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Article

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**Testing the Impersonal Impact Hypothesis in
the Public Health Domain****Edith G. Smit** , **Marijn H. C. Meijers** , **Carolyn Ischen** 

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Abstract

The *impersonal impact hypothesis* states that news consumption leads to an increase of social concern, but not to an increase of personal concern, whereas the latter is most important for stimulating behaviour change. However, previous findings are mixed and mostly investigate *private* health behaviour. Here we, therefore, conceptually replicate these findings by studying a *public* health crisis: the case of the Covid-19 pandemic. The results of our longitudinal, five-wave study do not show support for the impersonal impact hypothesis, but rather seem to reveal the possibility of a *personal impact hypothesis*. That is, our findings show that news consumption increased participants' personal concerns and to a lesser extent their societal concerns. News consumption furthermore indirectly affected adherence to governmental policy measures via these concerns. Additionally, participants adhered more to these measures when they believed they can make an incremental difference in stopping Covid-19 by adhering to Covid-19 policies (i.e., direct effect of participative beliefs). The belief of "doing it together" seems thus vital for policy adherence. Theoretical and practical implications are discussed.

Keywords

News consumption, media impact, public health, participative efficacy, adherence.

The *impersonal impact hypothesis* states that when media convey a threat (e.g., haze, aids, Covid-19), this impacts societal rather than personal concerns (Tyler & Cook, 1984). An often-positated negative side-effect of this is that the risk-warning media messages might not impact adherence to health behaviours as such behaviours are mostly driven by personal rather than societal concerns (Slater et al., 2015). This bleak picture seems to contrast with expectations that news media consumption could have a positive effect on adherence (Morton & Duck, 2001), as well as with experiences during the Covid-19 pandemic. The Covid-19 pandemic has

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changed the world as we knew it. Over 4.6 million dead to mourn worldwide, people suffering from long-covid, and many more suffering from mental health issues related to the pandemic (Frijters et al., 2021). At the beginning of the pandemic, governments and health institutions aimed to make people aware of the threat via the media (e.g., television, newspapers, press conferences) and to persuade them to adhere to Covid-19 policies, such as washing hands regularly, keeping physical distance, and working from home as much as possible. This also seemed to be effective, given people's willingness to adhere to governmental Covid-19 policies during the pandemic (Ibbetson, 2021; RIVM, 2021).

One factor that might explain this clash in theoretical expectations (media consumption leads only to increased societal concerns, but not to increased personal concern and thus not to policy adherence) and practical findings (people adhering to Covid-19 policies), might be that Covid-19 constitutes a specific case of health behaviour. Whereas research into the impersonal impact hypothesis mostly focuses on research regarding *private* health behaviour, Covid-19 concerns a *public* health behaviour. The Covid-19 pandemic is characterised by its collective, social nature (Reese et al., 2020; Van Bavel et al., 2020), where societal concern might be arguably of larger importance than personal health risks. During the pandemic, the motto often was that when it comes to battling Covid-19 we should be "doing it together". Here, we therefore posit to test the impersonal impact hypothesis in the public health domain by studying the case of the Covid-19 pandemic. To do so, we will make use of a five-wave panel study to test the effects of media exposure on societal concerns and Covid-19 policy adherence over time. Furthermore, we will also investigate whether the circumstances of media consumption (e.g., type of media consumed and proximity of infections) and people's beliefs regarding "doing it together" (participative efficacy; i.e., the belief that one can make an incremental difference to the collective efforts of combating Covid-19, Van Zomeren et al., 2012) influence the impersonal impact hypothesis.

The current paper adds to previous research by testing these hypotheses in a public health, rather than private health setting. Furthermore, the study can give insights in the importance of differential underlying mechanisms (societal vs personal concerns) of the news consumption effect on policy adherence. In addition, it tests the role of a potential moderator that so far was overlooked and might be able to explain previous mixed findings (Basil & Brown, 1997; Coleman, 1993; Slater et al., 2015; Snyder & Rouse, 1995; Schweisberger et al., 2014; Wu & Li, 2017). At the same time the paper has important practical implications on how news exposure might affect adherence to governmental Covid-19 policies and thus engaging in behaviours that might guard off Covid-19. Whereas many people in Europe are vaccinated and the height of the pandemic might be perceived by the majority of the public as behind us, Covid-19 persists to be problematic for those with a weak immune system and those who catch long-covid, and because of the pressure it causes on the healthcare system. Also, for possible future pandemics and public health crises it is important to understand what stimulates people's adherence to governmental public health policies.

Theoretical Framework

Impersonal Impact Hypothesis

Research shows that news consumption affects people's concerns, for example, concerning health (McComas, 2006; Slater et al., 2015; Tyler & Cook, 1984). When seeing this in light of

the Covid-19 pandemic, reading newspaper articles, watching the news, or reading online news concerning Covid-19 may thus increase people's concerns with respect to Covid-19. However, a body of research shows that media consumption may especially affect *societal* concerns, rather than *personal* concerns (e.g., Golan & Day, 2008; Tyler & Cook, 1984; Sun et al., 2008). That is, research in general shows that people distinguish between risks associated with others and risks associated with themselves, and due to the optimistic bias mostly expect others to be more vulnerable to risks than themselves (Coleman, 1993; Tyler & Cook, 1984). As such, media consumption is likely to affect people's societal concern, but typically does not affect people's personal concern. This is being referred to as the impersonal impact hypothesis (Culbertson & Stempel, 1985; Slater et al., 2015; Tyler & Cook, 1984).

The implications of the impersonal impact hypothesis could potentially be harmful, as research shows that health behaviour is mostly influenced by personal concerns (Basil & Brown, 1997; Rönnerstrand, 2013). This suggests that receiving disconcerting news regarding the Covid-19 pandemic via the media may not necessarily lead to more personal concerns and more adherence to governmental Covid-19 policy, as not so much personal but rather societal concerns increase due to media consumption.

However, previous research on the impersonal impact hypothesis in the health context mostly focused on personal health risks (e.g., skin cancer, Morton & Duck, 2001), whereas the Covid-19 pandemic constitutes a public health risk. That is, for a public health risk, it is important that everyone does their part, as it requires collective action to combat a public health risk such as a pandemic caused by transmittable diseases, and therefore, societal concern might be of larger importance. Research indeed shows that when having to indicate the importance of motives for people to adhere to governmental policy regarding Covid-19, societal concerns were indicated to be of larger importance than personal concerns (Meijers et al., 2021). In line with this, one study shows that when it comes to public policy support, societal concern could have a positive, stimulating effect (Slater et al., 2015). That is, based on agenda-setting literature, Slater and colleagues (2015) hypothesised and found that the relative importance of a societal problem increases the likelihood for policy support. Therefore, we hypothesise that societal concern will be more impacted than personal concern due to news consumption (impersonal impact hypothesis), but (in contrast to the impersonal impact hypothesis) that societal concerns will be related to adhering to governmental policies regarding Covid-19, as this constitutes a public rather than a personal health risk.

We will test the hypotheses using a longitudinal cross-sectional study constituting of five waves with t referring to time and n to the number of the specific wave. Cross-sectional studies can be suitable for drawing causal relationships when concepts are measured over time. We therefore test how news consumption at t_1 affects personal and societal concerns at t_2 and policy adherence at t_3 . The five-wave set-up also allows us to test the robustness of the findings, as we can test the model multiple times across the waves. We therefore test the model three times over time ($t_1, t_2, t_3 - t_2, t_3, t_4 - t_3, t_4, t_5$), to be able to get more insights on the robustness of the findings.

H1: More news consumption (on t_n) will result in more societal concern concerning Covid-19 (on t_{n+1}) and not or to a lesser extent to more personal concern concerning Covid-19 (on t_{n+1}).

H2: Societal concern (on t_{n+1}) will be positively related to adhering to governmental Covid-19 policies (on t_{n+2}).

When News Comes Closer

Whereas there has been quite some support for the impersonal impact hypothesis over the years, other research suggests that the impersonal impact hypothesis may be “too simplistic” (Morton & Duck, 2001, p. 605). That is, scholars suggest that media consumption might in fact influence personal concern once the news is more concrete, proximate, or personal involving (Nisbet & Ross, 1980; Snyder & Rouse, 1995). So far, the evidence of both the impersonal and differential impact hypothesis is rather mixed (Basil & Brown, 1997; Coleman, 1993; Slater et al., 2015; Snyder & Rouse, 1995; Schweisberger et al., 2014; Wu & Li, 2017). However, research does suggest that more personal news increases the likelihood of finding evidence for the differential impact hypothesis. That is, once the news becomes more personally involving (Basil & Brown, 1997; Schweisberger et al., 2014; Wu & Li, 2017) or once people are provided with more vicarious direct experience through more vivid exemplars (e.g., through more vivid media like TV or entertainment, see also Tyler & Cook, 1984; Snyder & Rouse, 1995), media consumption might influence personal concern. Vivid information is generally believed to be “emotionally interesting, concrete and imagery-provoking, and proximate in a sensory, temporal or spatial way” (Nisbett & Ross, 1980, p. 45). Vividness has been operationalised differently in the literature, varying from type of program exposed to (entertainment program versus news) to specific wording of sentences or pictures (concrete versus abstract), see meta-analysis of Blondé and Girandola (2016).

In this study, we will investigate whether news consumption may lead to more personal concern when the news comes “closer”. We operationalised this potential moderator in two ways. Firstly, we will look at the type of media that people were exposed to and investigate whether people who were exposed to more vivid news media, such as TV, are more likely to be personally concerned than people who were exposed to less vivid news media, such as newspapers. Secondly, we investigate whether people are more likely to be personally concerned once they have more vicarious direct experiences when the effects of Covid-19 are more proximate (i.e., a higher number of infections in their region).

H3: The effect of news consumption (on t_n) on personal concern (on t_{n+1}) concerning Covid-19 will become stronger (i.e., moderation) when (a) exposed to more vivid news media (on t_n) and (b) the threat becomes more proximate in terms of number of infections in the participant’s region (on t_n).

Participative Efficacy Beliefs

Behaviour change models such as the Extended Parallel Process Model (originally by Witte, 1992; recently applied by Jahangiry et al., 2020; Shirahmadi et al., 2020; Zhao & Wu, 2021), the Protection Motivation Theory (by Rogers, 1975; recently applied by Kim et al., 2021; Kowalski & Black, 2021; Wang et al., 2021), and the Health Belief Model (by Rosenstock, 1974; recently applied by Jose et al., 2021; Tong et al., 2020; Wong et al., 2021) all underline that people will engage in behaviour change (e.g., adhering to Covid-19 policies) once they perceive a threat of concern (e.g., personal and/or societal concern regarding Covid-19) and they believe that their actions can make a difference in combating the threat (perceived efficacy). When people only perceive a threat, but do not believe that they are able to act effectively against the threat, in other words when they have weak efficacy beliefs, they are unlikely to engage in behaviour. Perceived efficacy beliefs are thus vital for behaviour change (Koletsou & Mancy, 2011).

In line with this, previous research shows that efficacy beliefs are key in stimulating behaviour that stops Covid-19 from spreading (Clark et al., 2020; Jørgensen et al., 2021). Previous research highlights that societal threats, such as the Covid-19 threat, require participative efficacy beliefs specifically as such collective threats cannot be solved by a sole individual but require collective effort (Meijers et al., 2021; Van Zomeren et al., 2013). Participative efficacy is the belief that one can personally make an incremental difference in achieving the collective goal of keeping Covid-19 from spreading (Van Zomeren et al., 2013) and is therefore more suitable than personal efficacy beliefs which are about the difference one can make in achieving a personal goal. Participative efficacy beliefs thus consider the importance and indispensability of an individual's actions (e.g., working from home) towards achieving the collective goal (e.g., stop Covid-19 from spreading). In sum, based on previous research on behaviour change and based on Slater et al.'s (2015) proposition that personal concern might also affect policy support once such policies might reduce personal risk (as is the case with Covid-19), we hypothesise that participative efficacy beliefs are an important moderator such that concern affects policy support once people have high participative efficacy beliefs (i.e., the idea that their adherence to the policies might be effective in limiting the spread of Covid-19):

H4: (a) Personal and (b) societal concern (on t_{n+1}) will be only positively related to adhering to policy (on t_{n+2}) when people's participative efficacy beliefs are high.

Method

Participants and Design

To test our pre-registered hypotheses (see OSF link: <https://osf.io/r8wfvz>)¹, we made use of a longitudinal cross-sectional study constituting of five waves, which were part of a larger project (see OSF registration by Bakker et al., 2022). Members of I&O Research panel were approached five times for opinions on several topics, such as the political climate and Covid-19. The first wave started April 10 and ended April 21, 2020. A total of 3,750 panel members were invited and 1,741 responded (response percentage of 49.8%). The subsequent questionnaires were sent to the same respondents between April 30 and May 9 (wave 2, $n = 1,464$), between May 25 and June 3 (wave 3, $n = 1,255$), between June 29 and July 7 (wave 4, $n = 1,094$), and between September 10 and 16, 2020 (wave 5, $n = 904$). This means that participation rate dropped from 100% in wave 1 to 52% in wave 5.

Of the participants in the first wave ($n = 1,741$), 50.9% were female, 31.5% were younger (i.e., between 18 and 39 years of age) and 24.2% of the participants were 65 years and older. The education levels were divided as low (22.3%), medium (39.6%) and high (38.1%). Most lived in the western part of the Netherlands (43.0%). The others lived in the Southern (23.5%), the Eastern (22.3%) or the Northern part (11.1%). The average household size was 2.25 (including the participant). Of all participants, 57.6% had a job in the private or public sector, or were self-employed, and earned on average between 39,500 and 66,000 euro per year. Only 2.8% was student. Across the waves, there were some small changes in demographics. For our focal demographics, there was a change in age group ($\chi(2) = 11.93, p = .003$), that is a small drop in the age group 40-64 (from 44% to 42% of the sample) and a small increase in the group of 65+ (from 24% to 28% of the sample). Furthermore, we saw a small increase of men (from 49% to 52% of the sample, same decline of women; $\chi(1) = 5.99, p = .014$). There were no

differences between education levels across waves ($\chi(2) = 1.18, p = .553$). For the division and changes in the other demographics, see Appendix Tables A7 and A8 for specific sample characteristics per wave and differences between completers and dropouts. In other words, although a large group of participants dropped out during the five waves (namely 48.1%), the composition across the waves remains rather stable.

For robustness, the hypotheses were tested three times by using Hayes' PROCESS modelling (models 4, 7, and 14) and included the time element in the following way. In the first set, wave 1 resembles t_n (so wave 2 and 3 are t_{n+1} and t_{n+2} respectively). In the second set, wave 2 resembles t_n (meaning that t_{n+1} is wave 3 and t_{n+2} is wave 4). In the final set of testing, wave 3 resembles t_n (meaning that t_{n+1} is wave 4 and t_{n+2} is wave 5).

Measures

News consumption was measured with the question to what extent the participant made use of the listed news sources in the past week with a scale from "zero days" (coded 1) to "7 days of the week" (coded 8). Participants were probed about news sources on national, regional, and local level in outlets like television, newspaper, and online news. We included the 18 sources² that were measured in all five waves. These news sources had new content on a (almost) daily basis, i.e., for six or seven days a week. Following previous research (Meppelink et al., 2022), the scores were aggregated by computing an averaged news consumption variable. The variable that varies between 2.48 (wave 1) and 2.17 (wave 5), see Table 1A. This variable gives an indication of the diversity (how many different news sources) and frequency (how many days per week) news sources were consumed averaged over all daily news.

Vividness is the percentage of vivid audio-visual media (i.e., TV + online) people were exposed to out of their total self-reported news consumption (i.e., TV + online + newspaper). This measure was constructed by dividing the summed news consumption of the 11 TV and online (i.e., vivid) sources by the news consumption of all 18 news sources multiplied by 100. The mean vividness score varied between 70% in wave 1 to 67% in wave 5 (see Table 1B).

Proximity is the percentage of Covid-19 infections in the participant's province as a percentage of the total reported in the Netherlands in that calendar week. The infection numbers were downloaded from the official Dutch RIVM website³ and included in the database by recoding the province into the calculated proximity score within that province in the week that the participant completed the survey (see Table 1C).

Participative Efficacy was directly measured by the statement "When I behave in accordance with the Covid-19 policy (e.g., washing my hands), we reduce the spreading of the virus together" (adapted from Van Zomeren, Saguy, & Schellhaas, 2013). The 1-item measure was positively skewed and the mean varied between 5.93 (wave 1) and 5.80 (wave 5) on a 7-point agreement scale (1 = *completely disagree*, 7 = *completely agree*), see Table 1D). A dummy variable was used in the analyses to deal with the skewness (1 = mode, 0 < mode).

Concern is split into personal concern (two items) and societal concern (one item), based on Slater, Hayes, and Chung (2015). Personal concern was measured by the two 7-point agreement statements "I am concerned that I (/my family or friends) will be infected by Corona". These two items were averaged into a new variable, all reliability scores were sufficient (standardised Cronbach's alpha: wave 1 = .72, wave 2 = .75, wave 3 = .74, wave 4 = .75, wave 5 = .79).

Societal concern was measured by the 7 point-agreement statement “I am concerned that more people in the Netherlands will be infected by Corona”. Means and other descriptives are listed in Table 1E and 1F. Societal concerns were significantly higher than personal concerns per wave (results paired samples t-tests: wave 1 $t(1740) = -12.21, p < .001$; wave 2 $t(1428) = -12.99, p < .001$; wave 3 $t(1242) = -13.52, p < .001$; wave 4: $t(1088) = -12.49, p < .001$; wave 5 $t(898) = -18.02, p < .001$).

Adherence to governmental Covid-19 policy was measured by asking participants to which Covid-19 advices they adhered to during the past week (answering yes/no). They were presented with the following list of behaviours: washing hands regularly for at least 20 seconds, coughing and sneezing in the inside of the elbow, no hand shaking, not going to crowded places, keeping 1.5-meter distance to others, no grouping in public space, and staying at home as much as possible. The option that none of the advices were taken into account was also offered, but rarely used by the participants. The sum scores of the adherence activities per wave were very skewed as participants report being very compliant: only three participants in wave 1 for instance answered that none of the advices were taken into account, while most participants report doing all activities (57.6%) or at least six of the activities (82%). As adherence was very skewed, only the three activities that gave some variation amongst participants were used for further analysis, namely: washing hands, coughing and sneezing in the elbow, and staying at home as much as possible. These three were taken together by summing the yes-answers, see Table 1G.

Covariates. Three demographics were taken into account as covariates for their expected influence on concerns and news consumption (in addition to our hypotheses), namely age, gender, and education.

Results

Impersonal Impact Hypothesis

Our first hypothesis is based on the impersonal impact hypothesis and predicts that news consumption would affect the participants’ societal concern with respect to Covid-19, but not or to a lesser extent their personal concern. Figure 1 summarises the results of the three sets of mediation analyses: the first b value is based on the data of waves 1, 2, and 3 (see test details in Table A1 of the Appendix); the second b value is based on waves 2, 3, and 4 (see test details in Table A2); the third value is based on waves 3, 4, and 5 (see test details in Table A3). The results confirm that concerns are positively related to news consumption on t_{n-1} . In other words, the more days respondents consumed the news items in the past week on average, the more concerns they expressed on the societal as well as the personal level. As the impersonal impact hypothesis predicts an influence on the societal level and less on the personal level, our first hypothesis cannot be accepted. In our sample, personal concerns were stronger associated to news consumption than societal concerns.

Table 1. Descriptive Statistics per Wave

	<i>N</i>	Min	Max	Mean	<i>SD</i>	Skewness	<i>SE</i>	Kurtosis	<i>SE</i>
A. News Consumption (average days, averaged over 18 news sources, see note 2)									
Wave 1	1741	1.00	6.95	2.48	0.84	0.89	.06	1.02	.12
Wave 2	1448	1.00	6.95	2.37	0.81	0.85	.06	1.25	.13
Wave 3	1252	1.00	7.18	2.25	0.76	0.94	.07	1.85	.14
Wave 4	1092	1.00	5.83	2.19	0.76	0.97	.07	1.45	.15
Wave 5	904	1.00	5.49	2.17	0.75	0.88	.08	0.96	.16
B. Vividness									
Wave 1	1741	31.43	92.00	69.94	10.64	-0.70	.06	0.42	.12
Wave 2	1448	28.95	90.91	68.55	10.67	-0.73	.06	0.54	.13
Wave 3	1252	28.95	89.66	68.04	10.71	-0.63	.07	0.20	.14
Wave 4	1092	28.95	90.77	67.01	10.76	-0.57	.07	0.11	.15
Wave 5	904	30.77	100.00	67.00	10.65	-0.58	.08	0.25	.16
C. Proximity									
Wave 1	1739	0.98	22.93	11.78	6.26	-0.07	.06	-0.91	0.12
Wave 2	1462	0.82	20.88	12.16	6.44	-0.09	.06	-1.04	0.13
Wave 3	1253	0.76	21.79	12.26	6.61	-0.01	.07	-1.00	0.14
Wave 4	1093	0.73	22.80	12.34	6.89	0.12	.07	-1.00	0.15
Wave 5	903	0.79	29.08	12.96	9.39	0.54	.08	-1.06	0.16
D. Participative Efficacy^a									
Wave 1	1723	1.00	7.00	5.93	1.38	-1.73	.06	3.08	.12
Wave 2	1405	1.00	7.00	5.96	1.36	-1.78	.07	3.31	.13
Wave 3	1230	1.00	7.00	5.90	1.39	-1.63	.07	2.67	.14
Wave 4	1073	1.00	7.00	5.86	1.49	-1.70	.08	2.61	.15
Wave 5	887	1.00	7.00	5.80	1.50	-1.58	.08	2.17	.16
E. Personal concern									
Wave 1	1741	1.00	7.00	3.79	1.63	0.13	.06	-0.76	.12
Wave 2	1429	1.00	7.00	3.51	1.64	0.26	.07	-0.71	.13
Wave 3	1243	1.00	7.00	3.20	1.58	0.37	.07	-0.56	.14
Wave 4	1089	1.00	7.00	2.91	1.55	0.54	.07	-0.49	.15
Wave 5	899	1.00	7.00	3.19	1.66	0.42	.08	-0.67	.16
F. Societal concern									
Wave 1	1741	1.00	7.00	4.24	1.74	-0.19	.06	-0.82	.12
Wave 2	1429	1.00	7.00	4.04	1.78	-0.07	.07	-0.86	.13
Wave 3	1243	1.00	7.00	3.76	1.81	0.03	.07	-0.94	.14
Wave 4	1089	1.00	7.00	3.43	1.80	0.27	.07	-0.90	.15
Wave 5	899	1.00	7.00	4.13	1.94	-0.25	.08	-1.06	.16
G. Adherence^b									
Wave 1	1741	0.00	3.00	2.48	0.75	-1.32	.06	1.05	.12
Wave 2	1430	0.00	3.00	2.50	0.73	-1.30	.07	0.97	.13
Wave 3	1243	0.00	3.00	2.34	0.83	-1.09	.07	0.43	.14
Wave 4	1090	0.00	3.00	2.10	0.90	-0.72	.07	-0.35	.15
Wave 5	900	0.00	3.00	2.01	0.87	-0.56	.08	-0.43	.16

Note. ^a Mode for all waves was 7.00, median for all waves was 6.00. ^b Scale: number of yes-answers for the following three activities: washing hands, using the elbow, staying at home.

The second hypothesis describes the expected positive relationship between societal concern and support of the measures taken to decrease the number of Covid-19 infections. In other words, the more concerned participants are for society, the more they will adhere to the policy measures of washing their hands, using their elbows for coughing and sneezing, and staying at home as much as possible. The results confirm this expectation, although the relationship is not strong, see Figure 1.

When News Comes Closer

The expectation of hypothesis 3 is that exposure to more (vs less) vivid, vicarious direct experiences may increase personal concern (on t_{n+1}) when exposed to news (on t_n). This relationship is analysed by using PROCESS model 7 with either vividness (on t_n ; hypothesis 3a) or proximity (on t_n ; hypothesis 3b) as moderating variable. The results do not confirm hypothesis 3a. The relationship between news consumption (t_1) and personal concern (t_2) is not moderated by vividness (t_1 ; $b = 0.01$, $SE = 0.01$, $95\% CI = [-0.01, 0.02]$). The same results were found for the conditional effect of proximity. Thus, hypothesis 3b is not confirmed as there is no significant interaction effect between news consumption and proximity on personal concern (interaction effect = -0.001 , $SE = 0.01$, $95\% CI = [-0.02, 0.02]$). This is also the case for the other wave comparisons; none of the tested interaction effects were significant (see Table A4 in the Appendix).

Participative Efficacy Beliefs

When people have the idea that their personal adherence to the measures are effective in limiting the spread of Covid-19, i.e., when they score higher on participative efficacy, their relationship between their personal concerns and support for the measures taken is expected to be stronger (hypothesis 4a). This moderation effect is tested by means of PROCESS model 14 (moderated mediation model). In addition, participative efficacy may also influence the relationship between societal concern and adherence (hypothesis 4b). This expectation is also

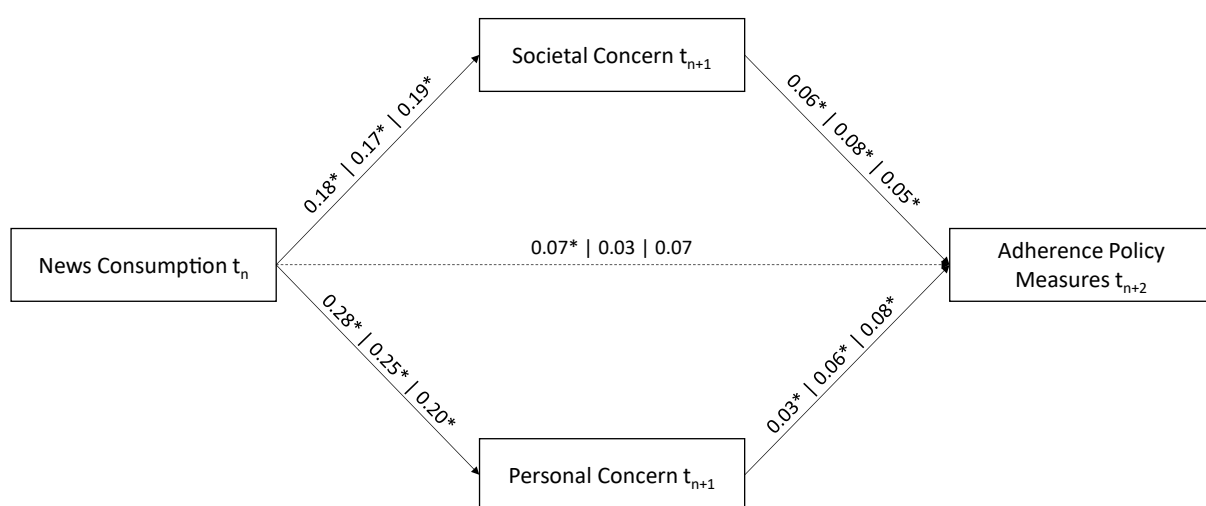


Figure 1. Impact of News Consumption on Adherence via Concerns

Note. B values of first, second and third set of tests respectively; covariates: age, education, gender; see Tables A1 to A3 in the Appendix for more details; * significant at 95% confidence intervals (Hayes, 2018, model 4).

included in the same PROCESS model. Adherence (dependent variable) and efficacy (moderating variable) are measured at t_{n+2} , while concerns (mediating variables) were measured on t_{n+1} . News consumption (independent variable) is measured at t_n . A dummy variable is used for Participative Efficacy as its distribution was positively skewed (see Table 1D).

Figure 2 shows a summary of the three moderated mediation analyses. Results show that hypothesis 4a is not confirmed by the data as the interaction effect between personal concern and participative efficacy is not significant at t_3 , t_4 and t_5 . Hypothesis 4b is also not confirmed by the data, because the interaction effect between societal concern and participative efficacy was negative at t_3 ($b = -0.08$, $SE = 0.03$, 95% CI = [-0.14, -0.01]). The moderated mediation showed that there is a very small effect ($b = 0.02$, $SE = 0.01$, 95% CI = [0.00, 0.03]) of news consumption on adherence via societal concern when participative efficacy is 0 (i.e., lower than 7 on the original scale). This effect is zero and insignificant when efficacy is 1 (i.e., 7 on the original scale; $b = 0.00$, $SE = 0.00$, 95% CI = [-0.01, 0.01]). This means that the impact of societal concern on adherence to policy measures is stronger when there is no strong belief in the effect of one’s own behaviour in reducing the spreading of the Covid-19 virus. The interaction effects at t_4 and t_5 were not significant (see Appendix, Table A5). When taken together, the results show that participative efficacy does not moderate the effect on concerns on policy adherence.

The direct relationship between participative efficacy and adherence to the Covid-19 prevention measures was significant and strong (for t_3 : $b = 0.61$, $SE = 0.12$, 95% CI = [0.37, 0.85], for t_4 : $b = 0.49$, $SE = 0.13$, 95% CI = [0.23, 0.75], and for t_5 : $b = 0.55$, $SE = 0.13$, 95% CI = [0.29, 0.81]). This means that participants indeed more often adhere to the requested behaviour when they believe that they can. Participative efficacy thus has a direct effect on Covid-19 policy adherence, rather than as a moderator.

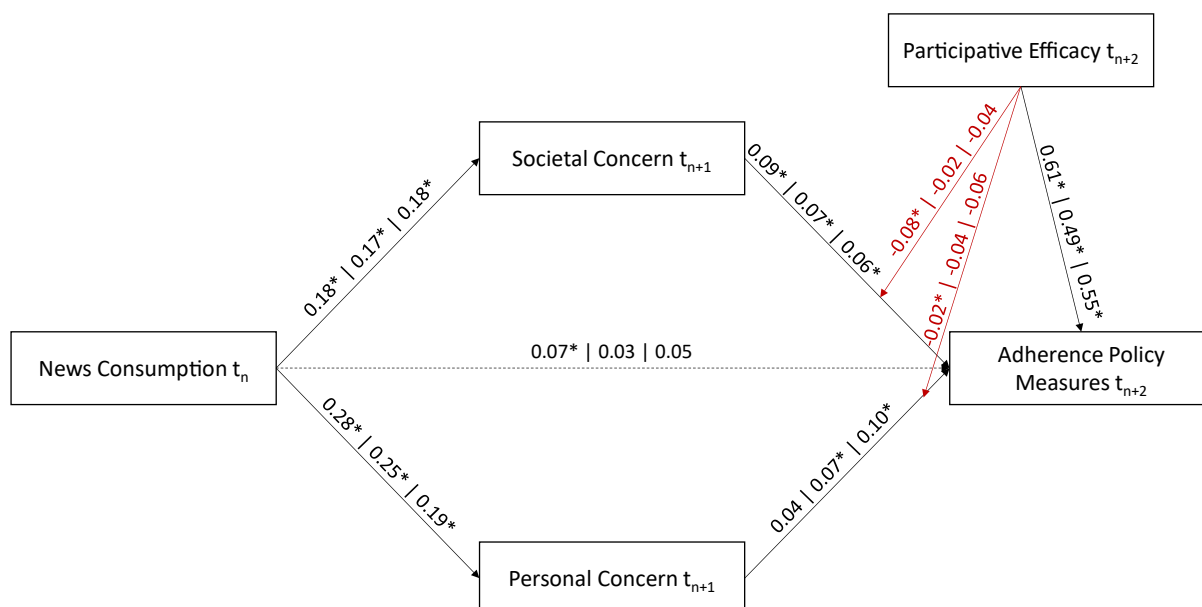


Figure 2. The Impact of Participative Efficacy Beliefs

Note. B values of first, second and third set of tests respectively; N = 1229, 1072, 886 respectively; covariates: age, education, gender; dummy variable for Participatory Efficacy (1 = scores > 6); see Tables A5 in the Appendix for more details; * significant at 95% confidence intervals (Hayes, 2018, model 14).

Discussion and Conclusion

In a five-wave panel study we investigated whether the impersonal impact hypothesis, which has often been investigated in private health behaviour context (e.g., Slater et al., 2015), can be replicated in a public health context by looking at the case of Covid-19. Based on this, it was expected that societal concerns would be more strongly affected by news consumption than personal concerns. Results however showed that news consumption increased participants' personal as well as their societal concerns, and indirectly via these concerns affected their willingness to adhere to the policy measures. In contrast to the impersonal impact hypothesis (Culbertson & Stempel, 1985; Slater et al., 2015; Tyler & Cook, 1984), news consumption thus seems to affect personal concerns as well.

We furthermore tested whether the differential impact hypothesis (Basil & Brown, 1997; Schweisberger et al., 2015), which proposes that under certain circumstances news consumption can affect personal concerns. We tested this expected moderation via two ways: 1) via the vividness of the type media consumed (e.g., TV vs newspaper) and 2) when the threat becomes more vivid due to higher numbers of infections in the participant's region. We found no evidence for such moderation effects. In conclusion, neither the impersonal nor the differential impact hypothesis has been supported by our data, as such adding to the mixed findings regarding the impersonal and differential impact hypothesis (Basil & Brown, 1997; Coleman, 1993; Slater et al., 2015; Snyder & Rouse, 1995; Schweisberger et al., 2014; Wu & Li, 2017).

Lastly, we tested whether the effect of societal and personal concern on Covid-19 policy adherence would only be positive once people have strong participative efficacy beliefs (i.e., they believe can make an incremental difference in stopping Covid-19 by adhering to Covid-19 policies). We found no evidence for such a moderation effect. The results did show a strong direct effect of participative efficacy beliefs on adherence to Covid-19 policies in line with previous research (Meijers, et al., 2021; Reese et al., 2020; Van Bavel et al., 2020). In other words, participants adhered more to these policy measures when they believed they could make an incremental difference in stopping Covid-19 by adhering to Covid-19 policies. In sum, what our study shows, is a personal impact hypothesis, thus that news consumption can increase personal concerns, and in this case more than societal concerns.

Implications, Limitations, and Future Research

Although personal concern was more impacted by news consumption over time than societal concern, the level of societal concern was consequently and significantly higher than the level of personal concern (see Table 1E and 1F for details). This means that participants were significantly more concerned for others in society than for themselves and their close others during the outbreak of Covid-19 between April and September 2020. Their level of concern was not extremely high, namely around the midpoint of the 7-point scale and followed the pattern of Covid-19 infections in the Netherlands with a first peak in March (during wave 1) and a second peak in September (during wave 5; Van Uffelen et al., 2021).

The finding that news consumption is more strongly related to personal concern and less to societal concern, might be due to the nature of the Covid-19 health risk. During the pandemic, the Dutch government (the country of the study) urged people to avoid catching the virus and infecting the ones they share a household with or are in close contact with (please note that in line with Slater et al. (2015), personal concern was defined as concern for oneself and concern

for close ones like family or friends). This might have caused the stronger effect of news consumption on personal rather than societal concerns. For future research, it could therefore be interesting to replicate the current study with another public health issue to see if similar findings arise. Covid-19 is set apart by other public health issues by the sudden and large, immediate impact it had in the beginning of the pandemic (when this study was conducted). Therefore, it would also be interesting to replicate the study in the coming stages of the Covid-19 pandemic, when people got more used to the risk it poses. Furthermore, we only found a direct effect of news consumption on policy adherence for the first sets of waves tested. Here news consumption might have had the function of learning about governmental actions, just once. This knowing on a more general level is less impacted by reading or watching news on more occasions, as this type of information was offered in the beginning of the pandemic (“once you know it, you know it”). Research during the same period confirmed that news consumption was especially high between the first months and dropped later (De Bruin et al., 2021).

The most important implication of our findings is that news consumption had an impact on concerns, both at the personal and the societal level. Theoretically this means that the impersonal impact hypothesis did not hold in the context of a new society-disrupting health risk and that further research is necessary when impersonal, differential, or personal impact is likely. Practically this means that increasing media attention for Covid-19 on moments when Covid-19 numbers start rising again may help in increasing both personal and societal concern and subsequently adhering to Covid-19 policy measures. This indicates that mass communication in the 2020’s is (still) a tool to communicate about health risks and has potential for collective action (see also findings of Jørgensen et al., 2021).

This study has some limitations to keep in mind. The first limitation is the measurement of news consumption. It was measured by showing panel members a list of several news sources and asking them how many days of the past week they consumed these sources. For instance, how many days they watched the public broadcasting news in the past week. This is a very general estimation of news consumption and does not say anything about how attentively they watched the news or for how many minutes. Someone who unattentively consumes a lot of different news outlets is calculated as a heavier news consumer than someone who follows the news attentively, daily, but of only one type (f.i., only NU.nl website). An indication of periods of use or intensity of use would have given a more deepened insight into news consumption. Also, a content analysis of the news programs in that period might give insights into the way Covid was addressed in terms of higher or lower personal or societal risk.

A second measurement related limitation is the use of 1-item measurements to decrease participant burden. Although research suggests that single item measures perform rather similarly to multiple item measures (e.g., Bergkvist & Rossiter, 2007), it means that concrete questions into past behaviour are more suitable for 1-item questions, and our concern measurements might have improved by including more items. A comprehensive multi-faceted concern measurement would also potentially differentiate better between different aspects of Covid related concerns.

A third limitation is the risk of social desirability in answering questions related to norm-related behaviour, especially during the first year of the Covid pandemic with health messages about what people should be doing in times of crisis (Neville et al., 2021). This means that our measurement of adherence to Covid-19 advice might reflect more the behaviour respondents thought they should have done and less what they did. Future research could also include these social norm influences.

Health communication during the pandemic not only addressed what people should and should not do to prevent virus outbreaks, it also showed the risk in terms of number of infections and deaths per region on an almost daily basis. Future research could test whether this type of content affects risk perceptions when it is perceived as closer. In this study, a proxy for vividness was used as a boundary condition for news consumption influence. In hindsight a more direct measurement of “risk closeness” or “news vividness” would have been better.

Lastly, future research could take into account the potential feedback loop that exists between being concerned, resulting in media consumption, and becoming more concerned (or not; cf. Te Poel et al., 2021). We addressed causality by including different time measurements (relation between concerns on a later moment in time than media consumption), but one should acknowledge the potential feedback loop here.

Conclusion

To conclude, media have an important role to play when it comes to stimulating (personal and societal) concern regarding the Covid-19 pandemic and to a smaller extent (indirectly) stimulating adherence to Covid-19 measures. In contrast to the impersonal impact hypothesis, the results thus show that media consumption can in fact increase personal concern, even for public health crises like the Covid-19 pandemic. Furthermore, when it comes to stimulating adherence to Covid-19 measures the results show that increasing (personal and societal) concerns might not be the best way to go, as these effect sizes were rather small. Instead, it might be better to further increase participative efficacy beliefs, as these beliefs had a stronger effect on adherence to Covid-19 measures.

Notes

1. We preregistered the hypotheses and analyses on OSF. Please note that the hypotheses differ a little bit as we (1) did not know upfront that we were able to collect longitudinal data, so we now test the hypotheses over time which is better given the cross-sectional nature of our data, and (2) we made the hypotheses a bit stricter in this final version to better match the actual expectations of the Impersonal Impact hypotheses (i.e., H1 on OSF: *More news consumption will lead to more societal concern concerning Covid-19*; current version of H1 *More news consumption (on m) will result in more societal concern concerning Covid-19 (on $m+1$) and not or to a lesser extent to more personal concern concerning Covid-19 (on $m+1$)*). Since PROCESS was updated from V2 to V3, we also use slightly different analyses as Model 23 was no longer available.
2. RTL news, NOS journaal, Hart van Nederland, Editie NL, Nieuwsuur, EenVandaag, Op1, other news on TV, Telegraaf, NRC, AD, Trouw, VK, FD, regional or local newspaper, NOS online, RTL online, and NU.nl.
3. <https://data.rivm.nl/geonetwork/srv/dut/catalog.search#/metadata/1c0fcd57-1102-4620-9cfa-441e93ea5604>
4. Bakker, B. N., Van der Wal, A., & Vliegthart, R. (2022). Covid-19 panel study in the Netherlands (OSF registration, created March 2020, updated January 2022, see <https://doi.org/10.17605/OSF.IO/KWZ7A>). The research was supported by a Dutch Research Council veni grant (VI.Veni.201S.075) awarded to the second author.

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Conflict of Interest

The authors have no conflict of interest to declare.

Ethical Approval

The study has been approved by the Ethics Review Board under number 2020-CS-12107.

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