When and Why do People Accept Nudges and other Public Policy Interventions to counter COVID-19 Transmission?

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Study description

The successful introduction of public policy interventions to prompt behaviour change depends heavily on whether citizens endorse the policy. We developed a concise review-based framework for the acceptance of nudges and other public policies to offer a better overview of the relevant determinants and their interactions. The model is easy to communicate and expandable for further research. The objective of this paper is to test the proposed framework and important intercorrelations for the context of COVID-19. Data is obtained from the COVID-19 Snapshot Monitoring project (COSMO). Literature indicates that higher problem awareness of COVID-19 predicts greater public policy acceptance countering COVID-19. We suppose this relationship to be mediated by citizens' desire for political intervention. Moreover, greater policy acceptance is assumed to predict greater policy compliance. We assume the path between problem awareness and the desire for political intervention to be moderated by agent-specific characteristics, and the path between the desire for political intervention and policy acceptance to be moderated by policy-specific qualities. Understanding when and why people do support governmental decisions during pandemics is helpful for further research on public policy acceptance and the successful implementation of public policies promoting health-protective behavior.

1. Framework on the Acceptance of Public Policy Interventions (Excerpt from Grelle & Hofmann (2021), in preparation)

Public acceptance of a certain intervention is essential to achieve its intended goals and to prevent reactance effects (Reynolds et al., 2019). When people feel threatened in their autonomy by the implementation of a policy or believe that its intended goal does not fit their values, they are more likely to reject the policy (Brehm & Brehm, 2013). Thus, measuring anticipated policy acceptance is important in order to identify and adjust possible shortcoming (also from the ethical perspective) preventing public rejection. We disentangled relevant determinants of public policy acceptance empirically studied so far, identified how they are interrelated and integrated them based on established psychological theories into a concise and parsimonious framework (see figure 1). The proposed framework puts the question central of whether people want the state to intervene in decision-making contexts that are important to them. We assume the desire for political intervention to mediate the positive relationship between problem awareness and public policy acceptance. Being aware of ongoing problems in certain decision-making contexts, however, does not automatically imply that citizens also want the government to intervene in that context. We identified agent-based characteristics such as trust in the government, personal values and control beliefs, that may strengthen or weaken the desire for political intervention. Similarly, the literature indicates that desiring political intervention generally is no guarantee that citizens would also approve the introduction of the specific public policy in that context, rather their acceptance levels will depend on a number of policy qualities. Besides the dominant role of perceived effectiveness, the literature stresses that people highly value their autonomy in decision making and prefer policies with a transparent goal and technique. We do not claim an exhaustive model, but an extensible model for nudging acceptance on which further research can build.

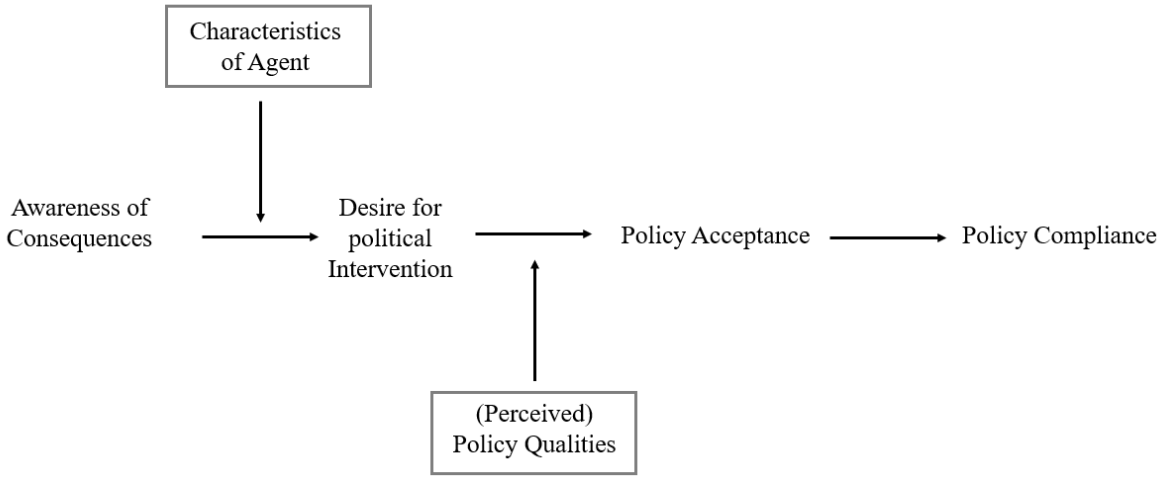

Figure 1. Proposed public policy acceptance framework model with problem awareness predicting policy acceptance which in turn predicts policy compliance. The positive relation between problem awareness and policy acceptance is mediated by the desire for political intervention. Agent-specific characteristics impact the link between problem awareness and desire for political intervention. Public policy qualities impact the link between desire of political intervention and public policy acceptance.

Awareness of Consequences. Across different decision-making domains, empirical research confirms that when citizens are aware or concerned of a certain societal problem and its consequences (e.g. CO2 emission, overweight, alcohol consumption, pandemics), their acceptance of public policies addressing the target problem in that context tends to be higher (e.g. Kallbekken & Sælen, 2013; Karlsson et al., 2020; Österberg et al., 2014; Reed et al., 2020). For example, in a longitudinal study on changes in alcohol policies and public opinions in Finland (Österberg et al., 2014), the researchers found that the more citizens became aware of the increasing alcohol problem in their country, the stronger they favoured restrictive policies. Further evidence comes from a study on public acceptance for environmental taxes by Kallbekken and Sælen (2011). They found beliefs about consequences for the environment (followed by consequences for others and for oneself) to be a relevant predictor for the acceptance of fuel taxation. Policy acceptance and compliance research in the domain of the Coronavirus disease 2019 (COVID-19) pandemic also points to its significant role of problem awareness as a determinant (e.g. Betsch, Wieler, Habersaat, 2020; Harper et al., 2020; Lewandowsky et al., 2021). For instance, recent work by Lewandowsky et al. (2021) on public acceptance of privacy-encroaching policies countering COVID-19 expansion, tested citizens' acceptance of co-location tracking strategies to monitor people's distancing behaviour during the pandemic. Besides general high acceptance ratings,

especially for time-limited policies with opt-out, results show that greater perceived risk of COVID-19 infections predicted greater policy acceptance. Empirical studies also indicate the determining role of perceived risk in complying with public policies mitigating COVID-19 spreading (Abdelrahman, 2020; Harper et al., 2020; Motta Zanin et al., 2020). Thus, a large body of empirical evidence points to a crucial role of problem awareness in predicting public policy acceptance and compliance. In alignment with prior empirical acceptance research and the established *Value-Belief-Norm model* (Stern et al., 1999), problem awareness is depicted as a main determinant of acceptance in our framework.

The presented empirical research is in accordance with established psychological theories such as the *Norm Activation Model* by Schwartz (1977), which outlines the major role of awareness of consequences, together with the realization of responsibility and personal norms and values, in explaining pro-environmental behaviour. The consequences people consider may relate to themselves, others or the environment, they can be of psychological or physical nature and specific or general (Schwartz, 1968). The *Value-Belief-Norm Theory* by Stern et al. (1999) and later Stern (2000), extends the *Norm Activation Model* to predict environmentally significant behavior including the support of policies and depicts, equally to the *Norm Activation Model*, problem awareness as an essential determinant. The model describes a causal chain of values, beliefs (including awareness of consequences and the ascription of responsibility) and personal norms steering pro-environmental behavior. In alignment with prior empirical acceptance research and the established *Value-Belief-Norm* model, problem awareness is depicted as a main determinant of acceptance in our framework.

Desire for political Intervention. In order to determine whether people find a certain public policy acceptable or not, it is essential to investigate if they want the government to engage and help citizens with certain relevant decisions in everyday life. The desire for political intervention as a determinant for public policy acceptance has received less attention in previous acceptance models. A series of empirical studies by Arad & Rubinstein (2018) indicates its relevant impact showing that some participants rejected a soft governmental intervention embracing the automatic enrollment to encourage savings, even though they would have engaged in the prompted behaviour if it had not been formulated by the government. The researchers interpret the finding as reactance-effects to the pressure to behave in a particular manner. They further found 14% - 25% of the participants, depending

on the country and the specific intervention, to oppose any governmental intervention expressing the opinion that it is not the government's responsibility to interfere in the private domain. Interestingly, when the researchers compared acceptance levels with presenting either the government or employers as the source of implementation, they found that citizens in the US and Israel accepted behavioural interventions implemented by employers more. Work by Osman et al. (2018) also points to lower support for policies when the government is the source of implementation compared to experts. Here, investigating the opposing pattern would also be interesting - do some people engage in the prompted behavior *because* it is the government instead of e.g. a large pharmaceutical company? Thus, to enhance the model's explanatory power for public policy acceptance and compliance, we explicitly measure whether individuals desire the government to take action and to differentiate general desire for political intervention from support levels for specific policies. We propose the desire for governmental interventions to mediate the positive relationship between problem awareness and public policy acceptance in such a way that citizens who are aware of a certain societal problem and its consequences show higher levels of desire for political intervention which in turn predicts higher public policy acceptance.

Acceptance & Compliance. As shown in our model, attitudes towards policy acceptance predict behaviour towards complying with the prompted behaviour by the policy. The depicted positive relationship between acceptance and compliance derives from established prior research on attitude-behavior relation (see meta-analysis by Kraus, 1995), with stronger attitudes (here higher acceptance ratings) showing higher predictive power of compliant behavior compared to weaker attitudes (e.g., Fazio & Williams, 1986). Further, there are a number of models depicting *how* attitudes can predict behavior (e.g. Ajzen, 1991; Ajzen & Fishbein, 1975; Fazio, 1990; Strack & Deutsch, 2004). The influential socio-psychological *Theory of Reasoned Action* by Ajzen and Fishbein (1975) and later the modified *Theory of Planned Behavior* by Ajzen (1991, 2001) as well as the related *Technology Acceptance Model* by Davis (1989) hold that behaviour is goal directed. Here, people's behaviour is predicted by their intention to perform a certain behaviour which is in turn predicted by attitudes toward the behaviour and subjective norms (and perceived behavioral control in the Theory of Planned Behavior). In our model, the attitude component embraces acceptance estimations towards a certain public policy.

2. Applying the Acceptance Framework to Policies Mitigating COVID-19

In December 2019, a new virus emerged in Wuhan, China, that was shortly thereafter declared as a global health crisis by the WHO due to its rapid spread and potential for severe health consequences. Countering the mitigations of Coronavirus disease 2019 (COVID-19) displays an overwhelming challenge for individuals, health systems, and policy makers demanding large-scale behaviour change. The principal challenge was to sustain and relieve health systems (Clark et al., 2020). New behaviour restrictions have been introduced by the government to slow its spread including increased hand washing, social distancing, lockdown restrictions, and wearing a face mask in public places. Public acceptance of these policies is critical to prevent reactance effects and successfully achieve the intended behavior change (Bargain & Aminjonov, 2020; Bavel et al., 2020; Betsch, Wieler, Habersaat, 2020). Collaborating with the COSMO project, we are aiming at testing determinants and its interrelations for the acceptance of and compliance with policy measures to mitigate COVID-19. The proposed framework with the matching variables from the COSMO data set is depicted in figure 2.

In the scope of the COSMO project citizens' acceptance was measured for a variety of different interventions aimed at reducing the spreading of COVID-19. These included both non-pharmaceutical interventions such as regular hand washing and mask wearing, and one pharmaceutical intervention, i.e. getting vaccinated against the virus. Whether citizens accept to and comply with these public policies depends on a range of economic, socio-political, and psychological factors (Brodeur et al., 2020; Chan, Moon, et al., 2020; Swami & Barron, 2020; Wright et al., 2020; Yamada et al., 2021; Yue et al., 2021). In the present study, we will focus on the following psychological determinants proposed in our framework that were measured in the COSMO dataset: Differences in citizens' awareness of consequences related to COVID-19 infections, trust in the government, attribution of responsibility to take action and Pandemic Fatigue. With respect to policy-specific determinants, we will include transparency, effectiveness and attached social and economic costs. In addition, there are demographic factors that may influence compliance, such as disposable income, education level, age, or gender (Atchison et al., 2020; Brzezinski et al., 2020; Capraro & Barcelo, 2020; Fan et al., 2020; Lewandowsky et al., 2021; Okten et al., 2020; Wirz et al., 2020; Wnuk et al., 2020; Yue et al., 2021). We will include the demographic determinants for sensitivity analyses, secondary analyses and as control variables.

Applying the proposed acceptance framework to the context of COVID-19, we propose that a greater awareness of consequences attached to COVID-19 predicts higher acceptance of a certain public policy countering COVID-19 transmission that in turn enhances compliance with that policy. Further, we assume the positive relationship between awareness of consequences and public policy acceptance to be mediated by the desire for political intervention. As can be inferred from figure 2, we will test the assumed main chain of problem awareness, desire for political intervention and public policy acceptance predicting compliance in the context of COVID-19. In a second step, we will test the assumed moderating effects of agent-specific characteristics and policy-specific qualities on the main link. In the following, for each determinant, we briefly outline the empirical findings provided by the acceptance literature so far for the context of COVID-19 policies.

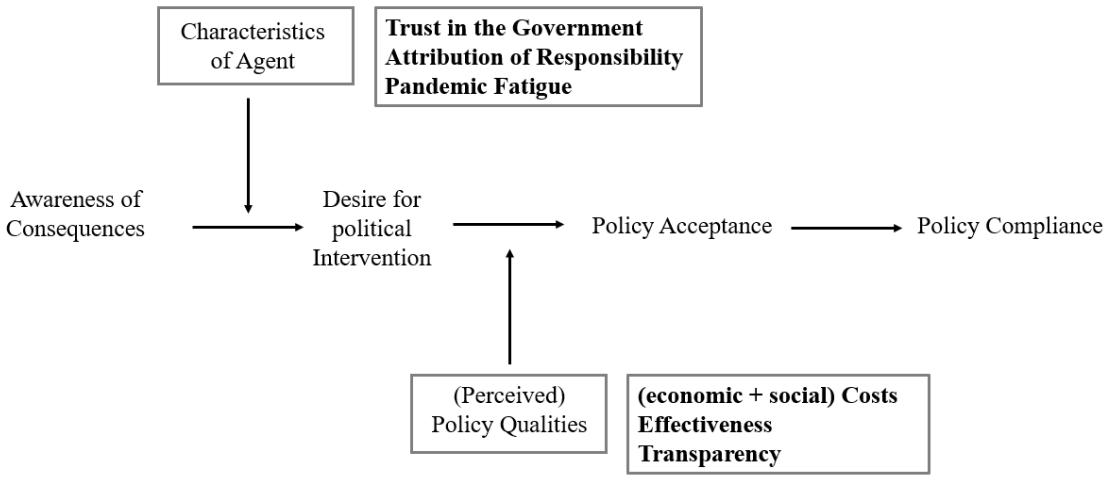

Figure 2. Proposed framework model for public policy acceptance in the context of COVID-19 Pandemic (with matching variables from the COSMO data set). Awareness of consequences attached to COVID-19 predicts policy acceptance countering the pandemic mediated by the desire for political intervention. Policy acceptance in turn predicts policy compliance. Agent-specific characteristics including trust in government, attribution of responsibility, and Pandemic Fatigue influence the relationship between awareness of consequences and desire for policy intervention. The perceived policy qualities embracing costs, effectiveness, and transparency influence the relationship between desire for policy intervention and public policy acceptance.

2.2. Characteristics of Agent

Trust in the Government. Trust in government has been found to be one of the strongest predictors of policy acceptance in the context of COVID-19 (Bargain & Aminjonov, 2020; Brodeur et al., 2020; Chan, Brumpton, et al., 2020 Lewandowsky et al., 2021). For example, using cell phone data measuring changes in non-essential trips and average distance traveled in the USA, Brodeur and colleagues (2020) foung countries with relatively high levels of trust in the government to comply more with mobility restrictions once a lockdown policy is implemented than countries with lower trust levels. In the same vein, researchers found higher levels of pre-crisis policy trust leading to greater adherence to national health policy during the COVID-19 pandemic (Bargain & Aminjonov, 2020). On the other hand, low trust in government may in turn result in lower uptake of health services, such as vaccination against COVID-19 (Bavel et al., 2020). A further interesting finding with regard to the proposed acceptance framework in the context of COVID-19 comes from Šrol and colleagues (2020) showing that lower trust levels in the institutional response to competently deal with the pandemic are associated with feelings of fear and lack of control, which in turn predict advocacy of COVID-19 conspiracy theories. Researchers indicate the positive effect of trust in the government on the adherence to COVID-19 policies to be independent of the specific measure (Bargain & Aminjonov, 2020; Goldstein & Wiedemann, 2021). Applying the proposed acceptance framework model to the context of the COVID-19 pandemic, we assume that the strength of the positive relationship between problem awareness and desire for political intervention will be moderated by the extent to which citizens trust in the government.

Attribution of Responsibility ("Eigenverantwortung"). A meta-analysis of techniques to promote motivation for health behaviour change by Gillson and colleagues (2019) stresses the impact of autonomy supporting public policies in fostering policy compliance and health-related behavior by the citizens. However, how does it impact policy acceptance when people are convinced that they can solve certain health-related problems on their own without external support and thus see themselves responsible to act? If people feel self-responsible to act and capable of solving a certain problem themselves or if they attribute the responsibility to the government might play an important role in determining public policy acceptance. We assume citizens' desire for governmental interventions during the COVID-19 pandemic to also depend on whether citizens attribute the responsibility to take

action (e.g. countering COVID-19 transmission) rather internally (e.g. “Self-responsible action based on commandments is sufficiently effective to counteract the spread of the virus”) or externally (e.g. “The Government should take the responsibility to counteract the virus spreading”). Here, we propose that the desire for political intervention is lower for people who attribute the responsibility to take action internally compared to people who attribute the responsibility externally, i.e. to the government. As shown in the framework in figure 2, we predict the attribution of responsibility to impact the positive relationship of problem awareness and the desire for political intervention in the context of the COVID-19 pandemic.

Pandemic Fatigue. Several countries show increasing signs of Pandemic Fatigue, i.e. citizens lose the motivation to follow the policies mitigating COVID-19 and to inform themselves about COVID-19 (WHO, 2020). Because public policy strategies countering COVID-19 depend mainly on citizens’ willingness to follow governmental restrictions and recommendations, Pandemic Fatigue might come with serious consequences for the infection rates with COVID-19 infections. Recent research suggests that the rapid increase of COVID-19 infections in Europe in fall 2020 (“the second wave”) was not the result of relaxing public policies in summer 2020 when the incidence rate was low, but the failure to enforce the prevalent public policies in fall 2020 when Intervention Fatigue increased (Rypdal et al., 2020). Hence, the high COVID-19 cases during the second wave in Europe might primarily result from an interplay with Pandemic Fatigue, lack of policy enforcement and decreased public compliance with policies.

In an online experiment with US participants, Lilleholt and colleagues (2020) could show a causal relationship between Pandemic Fatigue and people’s intention to comply with recommended health-protective policies. For the preventive health measures “physical distancing”, “hygiene behaviors”, “mask wearing”, and “information seeking” the authors found that Pandemic Fatigue is negatively related to people's self-reported tendency to comply with these measures. Also with respect to the proposed acceptance model, a further interesting finding is that people worrying about the potential (economic) consequences of the pandemic and the governmental restrictions experience more Pandemic Fatigue compared to people thinking a lot about the pandemic and feeling it physically close, fast spreading, terrifying and out of control (Lilleholt et al., 2020). Integrating the determinant Pandemic Fatigue into the proposed acceptance framework, we assume its effect to be evident already at an earlier stage, namely that Pandemic Fatigue reduces the desire for political intervention

more generally which in turn decreases the acceptance of and compliance with public policies related to COVID-19.

2.3 (Perceived) Policy Qualities

Costs & Benefits. When individuals perceive the behaviour change promoted by a certain public policy countering COVID-19 is attached to higher costs compared to benefits, it is not surprising that the target person would rather reject that policy. For example, in a telephone survey with Malawians, Kao and colleagues (2021) found individuals to be more willing to follow COVID-19 restrictions when the expected costs are low and the benefits high. However, when the benefits of the measure exceed the costs, e.g. when infection rates increase rapidly, citizens would accept more costly public measures like staying at home. The authors conclude that the more serious the situation is perceived, the greater the willingness to invest effort in implementing COVID-19 related public policies. The authors further point out that for people to protest against COVID-19 measures, a common argument displays the economic cost caused by the lockdown and the lack of government support for small businesses and poor households. In a review paper on improving adherence with quarantine, Webster and colleagues (2020) further indicate the important role of the policies' cost-benefit perceptions in compliance behavior by concluding that public health officials should emphasize the public health benefits of engaging in quarantine.

The success of interventions countering a pandemic further depends heavily on voluntary compliance with governmental guidelines (Brouard et al., 2020). Here, literature indicates that the extent to which individuals consider collective welfare is essential. For example, empirical research has shown that increased social capital and solidarity are positively associated with the prevention of COVID-19 infection (Barrios et al., 2021; Bartscher et al., 2020; Goldstein & Wiedemann, 2021). Bai and colleagues (2020) further indicate that districts with high civic standards comply more with policies compared to districts with low civic standards. Closely related to the construct of solidarity and social capital is the question of the social costs an individual must bear when complying or not complying with public policies. We assume the perceived social costs to play an important role in the acceptance of and compliance with public policies. Important research investigating the role of social costs for policy acceptance comes from Betsch, Korn and colleagues (2020). The researchers compared the effects of mandatory and voluntary mask policies on behavioural consequences related to the policy effectiveness, stigmatisation and

perceived fairness. Results indicate that the implementation of mandatory mask-wearing policies (compared to voluntary mask policies) better predict citizens compliance with COVID-19 restrictions because their social costs are perceived to be lower by citizens since they appear to be more effective, more fair, and more socially responsible (Betsch, Korn, et al., 2020).

In sum, a balanced cost-benefit ratio is crucial for the success of public policy, also in the context of health decisions. Therefore we assume, as depicted in our framework, that individuals' perceived (economic and social) costs impact the link between the desire for political intervention and policy acceptance.

Effectiveness. The perceived effectiveness of a certain public policy countering the COVID-19 pandemic largely predicts whether citizens are willing to accept and comply with the policy. For example, in a large international study by Clark and colleagues (2020) investigating predictors of COVID-19 voluntary compliance behaviour, the researchers identified beliefs about the effectiveness of public policies as a crucial factor. Here, perceiving health procedures as effective in mitigating COVID-19 transmission was found to be one of the strongest predictors of compliance with the restrictions. Perceived effectiveness was further predictive for subsequent health protective behavior. Hence, it is crucial for citizens to believe that adherence to public guidelines will indeed reduce their susceptibility to the disease or the severity of the disease.

Further, Motta Zanin and colleagues (2020) investigated citizens' perceptions regarding the efficacy of mitigation measures by the Italian government during the first lockdown in Italy and found a significant part of the citizens indicating that they perceived the measure as inadequate. They criticized especially that the measures were taken too late, communication was not clear, measures were not stringent enough and measures were defined in a disorganized way. The authors explain the nevertheless high acceptance rates of and compliance with public policies among Italians by their high risk perceptions since Italy was severely affected by the COVID-19 pandemic and suffered many fatalities. Fitting these insights into the proposed framework, perceived policy effectiveness is assumed to impact the link between desire for political intervention and policy acceptance countering COVID-19.

Transparency. A transparent communication concerning the aim of a certain policy (planned to be) introduced by the government is crucial for their acceptance. For example, in the review by Webster and colleagues (2020) on how to improve adherence with quarantine, the researchers conclude that public health officials should provide a timely, clear rationale for quarantine and information about protocols. The authors add that these results may be applicable to other public policies too, such as social distancing.

Further, in an empirical survey study by Briscese and colleagues (2020) on compliance with COVID-19 social distancing measures, the researchers found that individuals were more likely to reduce, and less likely to increase self-isolation effort when they were negatively surprised by a given hypothetical extension (i.e., if the extension is longer than what they expected), whereas positive surprises had no impact. These results emphasize the important role to transparently communicate the introduction and progress of new measures to the citizens in order to enhance compliant behaviour.

3. Hypotheses, aims and objectives

Main Question:

When and Why do People Accept Nudges and other Public Policy Interventions to counter COVID-19 transmission?

H1. The more people are aware of consequences attached to a COVID-19 infection, the more they accept nudges and other public policy interventions countering COVID-19 transmission (e.g., wearing a face covering mask, social distancing, stay-at-home orders). We call this relationship between awareness of consequences and policy acceptance the overall X-Y relationship.

H2. The overall X-Y relationship is mediated by the desire for political Intervention. Higher awareness of consequences attached to a COVID-19 infection predicts a stronger desire for political intervention (X-M pathway), that in turn predicts greater acceptance of public policy interventions (M-Y pathway).

H3. Greater policy acceptance predicts greater policy compliance.

We hypothesize certain agent-specific characteristics to moderate the positive relation between awareness of consequences and the desire for political intervention.

H4. The relationship between awareness of consequences and desire for political intervention is moderated by trust in the government, such as the impact on the desire for political intervention is larger when trust in the government is high.

H5. The relationship between awareness of consequences and the desire for political intervention is moderated by attribution of responsibility, such that the influence on the desire for political intervention is larger when individuals attribute responsibility for action externally (to the government) compared to individuals who attribute responsibility internally (to citizens).

H6. The relationship between awareness of consequences and desire for political intervention is moderated by Pandemic Fatigue, such as the impact on the desire for political intervention is lower, when Pandemic Fatigue is high.

We hypothesize certain perceived policy-specific qualities to moderate the positive relation between desire for political intervention and policy acceptance.

H7. The relationship between desire for political intervention and policy acceptance is moderated by the perceived costs attached to sticking to the public policies, such as the impact on policy acceptance is larger when the costs are low.

H8. The relationship between desire for political intervention and policy acceptance is moderated by the perceived effectiveness of public policy, such as the impact on policy acceptance is larger when the effectiveness is high.

H9. The relationship between desire for political intervention and policy acceptance is moderated by the perceived transparency of public policy, such as the impact on policy acceptance is larger when the transparency is rather high.

4. Materials and Methods

For this study, we use data from the COVID-19 Snapshot Monitoring (COSMO) that was collected on 11/03/2020 and 11/04/2020.

Sample size, power and precision:

The sample size of the COSMO dataset is 1013. It is a Germany-wide quota sample representative of age x gender, federal state.

The key dependent variables are “Policy Acceptance” and “Policy Compliance”. A detailed list of all items used from the COSMO Dataset and their construct affiliation can be found in the appendix.

To achieve one overall score for our predictors and the dependent variables in our model, we will draw the mean of the participants’ scores across the respective items for each construct. To ensure internal consistency we will calculate Cronbach’s alpha for each scale (minimum value should be .70). We will exclude items with item-total correlation below .30.

For statistical analysis of the data we use the software "R".

We plan to use the following statistical procedures to test the hypotheses:

We will conduct (moderated) multiple regression analyses to test the proposed main effect and moderating effects on public policy acceptance and compliance. In order to test the model fit of the predicted moderated mediation model as a whole, we will use structural equation modelling.

To ensure high quality data, we will control for social desirability using the Kurzskala Soziale Erwünschtheit – Gamma (Kemper et al., 2012) (english version: social desirability gamma short scale, Nießen et al. (2019)).

For sensitivity analysis, to test robustness of results, or secondary analyses we will include the following demographic data:

- Age
- Gender
- Children
- Education
- Employment
- Self-employment
- Inhabitants
- Federal state
- Relationship status

- Migration background
- Household size
- Single parent
- Household income

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