Paternalism Attitudes and the Happiness Value of Fundamental Freedoms*

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Abstract

The Governmental Paternalism Index is a new empirical index that measures individuals' attitudes towards governmental regulation and prescriptions that aim at preventing potentially self-harming behavior. Our results indicate considerable heterogeneity in how individuals support, or object to, such governmental prescriptions. We design and use this new index in a survey on life satisfaction during the covid-19 pandemic to assess how restrictions of personal freedom affect life satisfaction, and how the attitudes towards governmental paternalism affect this relationship. Our results indicate that losses in life satisfaction in the course of the Covid-19 pandemic are mainly attributed to restrictions in personal freedom and to a negative outlook on societal change, and that individuals' value in the Governmental Paternalism Index is a major determinant of the size of this effect.

Keywords: governmental regulation, Governmental Paternalism Index, self-harming behavior, life satisfaction, civil liberties

JEL classification: H11, H12, C90, K38

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'We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.'

1 Introduction

Many modern democracies attach great importance to freedom rights. The United Nations firmly establishes them in the *Universal Declaration of Human Rights*, which mentions liberty together with the right to live and security of person in Article 3. The ideal-typical version of these fundamental norms and values is also found in the *US Declaration of Independence* as quoted above. Rights of freedom may have important instrumental significance. Economic freedom may foster economic prosperity and its dynamics.[1] Almost by definition, there is also an intimate relationship between political freedom and democracy. In this paper, we focus on another essential dimension of freedom—the personal freedom of individuals. We measure and quantify the direct life-satisfaction benefit that citizens may attribute to personal freedom*s* such as freedom of movement and travel, to associate with friends, and the availability of a large set of possible lifestyle choices and activities. Measuring this relationship is of basic epistemological interest. It is also of high policy relevance, as policy decisions must weigh these basic freedom rights against other basic human rights in many situations of crisis.

The measurement of the relationship between civil liberties and life satisfaction is an important field of research. Mainly by using panel data, exploiting variation between countries and variation within countries over time, many studies diagnose a positive relationship. Foundational contributions are Inglehart and Klingemann (2000), Veenhoven (2000) and Frey and Stutzer (2002). More recent studies are Graafland and Compen (2015), Jackson (2017), Nakazato et al. (2017) and Spruck and Kešeljević (2016). Two studies use survey methods and come methodologically closest to our paper: Windsteiger et al. (2020) use between-treatment variation in the precision of statistical information given to the respondents about the lethality of the 2020 pandemic to determine correlates of changes in life satisfaction. Hadsell and Jones (2020) point to individual approval or disapproval of governmental policy as a possible determinant of life satisfaction. To measure approval, their questionnaire generates a composite 'pro-capitalism' index for each subject and compares this preference index with an established measure of Economic Freedom in North America. They examine the deviation between these measures as a possible explanatory variable for life satisfaction.

To assess the relationship between personal freedom and life satisfaction we conduct an internet survey in Germany that took place in June/July 2020, after the first few months of the 2020 pandemic.[2] Our study constructs a new index,

[1] For a recent account of the large empirical literature on the relationship between economic freedom and economic performance see the survey by Hall and Lawson (2014).

[2] The pandemic stimulated much empirical work, including work based on international

measuring individuals' attitudes towards governmental paternalism—attitudes towards government-mandated rules that are designed to protect individuals from potentially self-harming behavior. The study explains *changes of life-satisfaction* caused by the massive change in liberties during the pandemic. This allows for an estimation of the contribution of personal freedom rights to individuals' life satisfaction. We then investigate into the relationship of attitudes towards governmental paternalism as measured by our new index and the contribution of personal freedom to life satisfaction. Specifically, we investigate how these attitudes explain the heterogeneity among the participants.

Psychological science developed a large number of tests to measure various personality traits. A meta-study by DeNeve and Cooper (1998), for instance, lists 137 personality traits that have been distinguished and analyzed. Some of the analyses study the correlation between such traits and well-being (see, e.g. Steel et al. 2008). Our analysis includes two well-studied personality traits: the first one is psychological 'reactance' (see the foundational work by Brehm 1966 and a review by Miron and Brehm 2006). The reactance index can be described as measuring disapproval of being lectured and patronised by others. The 'locus of control' (see Kovaleva et al. 2012) describes the extent to which a person believes that the course of his or her life depends largely on his or her own actions rather than on the actions of others or on chance and luck. We use standard sets of questions to assess individuals' reactance and locus of control. But unlike previous studies, we correlate these with the change, rather than the level, of life satisfaction. We estimate how a person's personality traits affect the change in life satisfaction that is caused by the reduction in personal freedoms. Our index of Governmental Paternalism measures the position of the individual with regard to the trade-off between the desire to choose and decide what risks to take, and the desire to be protected by the state from dangers arising from one's own behavior.

Previous work documents the epistemological importance of the research question. Its policy importance emerges in the context of political decisions and constitutional court decisions. These must weigh basic human rights against each other. Pandemics, cybercrime, or the war against terrorism are generic examples. Constitutions do not give an absolute status to one single human right. They often list several fundamental human rights, such as freedom rights, the right to life or the protection of physical integrity, and attribute the same level of importance to them. If a policy choice affects several of these rights, difficult questions of commensurability and the weighing of different interests need to be addressed. An important example is the 2020 pandemic that threatened human lives. It invoked legal actions and policy measures that restricted fundamental freedoms in an attempt to control the infection spread. The measures restricted, for instance, basic economic freedoms, the freedom of movement or to meet with

surveys. Compared to an international survey, the focus on one country has advantages and disadvantages. Countries' considerable variation in their crisis response gives useful variation (see Hirsch, 2020, for differences in the responses in the first half of 2020). However, this variation is likely to be partially driven by severity and the time path of the pandemic in different countries. These differences in crisis responses are not exogenous.

friends, the freedom of assembly and the range of lifestyle choices. Because these rights are curtailed in an attempt to pursue and guarantee other fundamental rights, commensurability becomes a central issue in this context. This holds especially for courts that had to assess the adequacy of the government-mandated restrictions.[3]

The remainder of this paper is structured as follows. Section 2 summarizes our survey experiment, section 3 presents the results, and section 4 discusses our findings and concludes.

2 The Survey Experiment

2.1 Survey Design

Overview The overarching research question addressed here is to measure and explain the change in remembered subjective life satisfaction between January 2020 and April/May 2020, to identify the components that constitute this satisfaction change, and to identify the factors that explain the correlates of satisfaction change. More specifically, in the course of the 2020 pandemic (Covid-19) the German government implemented regulations that were meant to contain the spread of the virus, but also restricted liberty rights with respect to personal, political and economic freedoms (see Hirsch 2020 for a comparative overview of lockdown measures starting in March 2020 inside the European Union). In combination with the threat to one's health and other consequences of the pandemic, these factors are expected to reduce subjective life satisfaction.[4]

Implementation The survey was conducted end of June/beginning of July 2020. The sample size was 4,411. The composition of survey participants was representative of the German population with respect to sex, age, income and state of residence. The survey company Respondi administered the panel, the distribution of the survey and the participant payments. The project received ethics approval by the Ethics Committee of the Department of Economics of

[3] See for example Berenson (2020), and Curran et al. (2020). The United Nations also pointed out these aspects early on in the Covid-19 pandemic (UN-2020). In Germany, the Federal Constitutional Court, for instance, decided already on April 7, 2020 about the commensurability of prohibitions on outgoing in public and of meeting with others (Court ruling of 07. April 2020 - 1 BvR 755/20).

[4] The survey experiment also involved four information treatments in a between-subjects design. All participants received information on German policies on the prevention of the spread of Covid-19 in March and April 2020. In the treatment groups, the German policies were subsequently compared to Danish policies (equally restrictive), Swedish policies (less restrictive), or Spanish policies (more restrictive). We expected that the country comparison might intensify or dampen subjective changes to the life satisfaction dependent on an individual's preference for government interventions. However, we do not find any significant treatment differences to the control group on the main outcome variables change life satisfaction (Wilcoxon-Mann-Whitney test: $p = 0.25$, $p = 0.18$, $p = 0.55$) and the contribution of changes to the personal freedom (Wilcoxon-Mann-Whitney test: $p = 0.98$, $p = 0.50$, $p = 0.85$). Hence, we abstain from using the data categories generated by these information treatments in what follows. Treatment comparisons refer to the complete sample, detailed results are available upon request.

LMU Munich ('Attribution of Happiness Losses,' date of approval 06/09/2020) and was pre-registered with the EGAP registry (registration ID 20200624AB, date of registration 06/24/2020).

Outcome Variables At the begin of the survey, participants state their remembered life satisfaction in early 2020 on a 1 to 10 likert scale. [5,6] Even though the pandemic was already raging in China, Germany was still largely unaffected by the pandemic in January 2020. In the further course of the survey, participants were asked for their remembered life satisfaction in April/May 2020 on the same scale.[7] In this period the stock of infections was considerable, the number of new infections was still substantial but on the decline and restrictions to civil liberties peaked. To assess the individual changes in life satisfaction, we use the difference between both remembered levels of life satisfaction as the first of our main outcome variables.[8]

To decompose the total change in life satisfaction, we asked participants to disentangle the total change into six categories of how the pandemic and the governmental actions taken affect life satisfaction. These mutually exclusive categories include changes due to the economic situation, changes due to the personal freedom, changes due to the domestic situation, changes due to the health situation, the role of the outlook of societal change, and a miscellaneous category labelled 'Other Factors.' Each category can receive between -5 points, meaning that the category strongly contributes to a decrease in life satisfaction, and $+5$ points, meaning that the category strongly contributes to an increase in life satisfaction. The relative sampling of points to different categories allows us to determine the contribution of each category to the overall effect of the satisfaction change. The contribution of the changes in personal freedom to the change in life satisfaction is the second of our main outcome variables.

Explanatory Variables We employ three main explanatory dimensions that are potentially correlated to the change in life satisfaction. First, we de-

[5] Such scales are commonly used, and a prominent example is the World Value Survey. Our question and scale is adapted from Q49 in the 2017 -2021 World Values Survey Wave 7 (Haerpfer, Inglehart, Moreno et al. 2020) that is "All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are 'completely dissatisfied' and 10 means you are 'completely satisfied' where would you put your satisfaction with your life as a whole?" with answers on a likert scale from 1 ('completely dissatisfied') to 10 ('completely satisfied').

[6] Diener, Oishi and Tay (2018) provide an overview on subjective well-being measures. They discuss robustness and reliability of self-reported measures and ascribe good reliability to them. They also elaborate on the effect of potential confounding factors. See also the discussion in the surveys by Frey and Stutzer (2002), Helliwell and Putnam (2004), Clark, Frijters and Shields (2008), Diener (2012), and Clark (2018).

[7] We can shed some light on the validity of using remembered values rather than current values by comparing the remembered value for April/May 2020 in this paper to the current value for April/May 2020 elicited in Windsteiger et al. (2020). The sample characteristics in the complete sample of both studies are comparable. We do not find any major difference between the actual and remembered value for April 2020 (6.15 vs. 6.14, Wilcoxon-Mann-Whitney test: $p = 0.87$). We also find only a minor difference between the remembered value for January 2020 in both studies (7.31 vs. 7.23, Wilcoxon-Mann-Whitney test: $p = 0.09$).

[8] The use of the life satisfaction differences also corrects for level effects that might be caused by using remembered rather than current satisfaction ratings.

sign what we call the 'Governmental Paternalism Index' to capture individuals' preferences for government-mandated prescriptions for their personal life. This index aggregates eleven statements. Each statement deals with a different trade-off emerging from the desire to choose and to decide what risks to take, and from the desire to be protected by the state from adverse effects arising from one's own behavior. For each statement, participants state their agreement on a five point likert scale. Appendix A.1 provides the complete set of questions and describes how the index was constructed from these questions.

Moreover, we measure psychological reactance, a personality trait that was suggested by Brehm (1966). Reactance roughly addresses a person's disapproval of being lectured and patronized by others. We use a set of 14 statements adapted from Hong and Page (1989). Finally, we include the locus of control of each participant. This personal trait was introduced by Kovaleva et al. (2012) and measures the extent to which a person believes that the course of her life depends largely her own actions rather than on the actions of others or on chance and luck. To generate these indices, we condense the respective set of statements by factor analysis into a single, one-dimensional index value (for the procedure and results, see the Appendix A.1).

Control Variables We elicit a set of basic socio-economic control variables (sex, age, marital status, state of residence, household income and household size). Further control variables include the employment and education status, further impacts of the Corona pandemic on the personal life and the compliance with the measures taken against the spread of the Corona virus. In most of our analysis, we will control for the set of basic socio-economic control variables.

2.2 Expected effects

We expect a general reduction of remembered life satisfaction between January 2020 and the peak lockdown months April and May 2020 on average in the aggregate. The potential drivers of these include direct and indirect threats to the physical integrity and participants' health by the virus, consequences from the sharp economic downturn in the first/second quarter of 2020 such as job losses, employment uncertainty, or business bankruptcy, the effect of restrictions to the freedom of life such as mobility restrictions, restrictions to meet with others, or curfews, challenges to the domestic situation as of restricted space or homeschooling, or a negative outlook on societal changes such as prolonged restrictions.[9]

The key object of interest is not the overall change in life satisfaction but its decomposition into different categories, and in particular how government-mandated constraints on individual freedom contributed in terms of direction and size to the change in life satisfaction. A working assumption is that the freedom-reduction, taken in isolation, affects life satisfaction negatively on aver-

[9] Based on the heterogeneity of life-satisfaction changes found in the previous survey project by Windsteiger et al. (2020) we are also not surprised if we find some heterogeneity in the life satisfaction changes across the participants with respect to the size and the sign of the change in overall life satisfaction.

age in the aggregate. Both the virus itself as well as government-mandated rules and restrictions to contain the spread of the virus lead to a drastic limitation of the freedom of life in Germany.

The aim of the Governmental Paternalism Index is to measure to which degree individuals approve to governmental interventions to limit potentially adverse or self-harming behaviors and to which degree they are willing to delegate decision rights for their personal lives to the government. The governmental freedom-restricting measures should hit people harder who give greater priority to individual freedom of choice. Hence, these people may feel more hurt by the governmental interventions and recommendations, and consequently may attribute a larger contribution of losses to their life satisfaction to this category.[10]

2.3 Statistical Analysis

Definition of Change in Life Satisfaction

The change in life satisfaction is denoted by Δ and calculated as follows:

$$\Delta = \text{Life Satisfaction}_{\text{April 2020}} - \text{Life Satisfaction}_{\text{January 2020}}$$

This change is the difference between the two remembered self-reported life satisfaction ratings.

Calculation of Contribution of each Category

For the calculation of the contribution of different categories of how the pandemic and the governmental actions taken affect the overall change in life satisfaction Δ, we transform the points distributed to each category into the proportional importance of the respective category for the change in life satisfaction.

Formally, we apply following econometric procedure. Let $p_{Cat,i}$ denote the number of points an individual i distributes to the respective category with $p_{Cat,i} \in [-5, 5]$ and $Cat \in \{$Economic Situation, Personal Freedom, Domestic Situation, Health Situation, Societal Change, Other Factors$\}$. As we do not impose the restriction that the sum of points distributed adds up to the total change in life satisfaction (i.e. we allow for $\sum p_{Cat,i} \neq \Delta$)[11], points distributed

[10] We may also hypothesize that participants who look less favorably on governmental paternalism have a larger total reduction in life satisfaction. However, there might be a confounding effect: persons who look more favorably on governmental paternalism may feel a larger drop of life satisfaction if they believe that the government-mandated restrictions do not go far enough, and that they are not sufficiently protected by restrictions to reduce the spread of the virus. They might consequently suffer more from the threat to their health and incur a larger reduction in life satisfaction.

[11] Suppose we had this restriction. Consider a participant with a negative change in life satisfaction by one point that is caused by two equally contributing factors. As the distribution of points to categories is in integers, the participant had to distribute the negative point either to just one of the two categories (leaving the second category out), or had to correct by distributing a positive point to a third category. Our approach avoids this problem and ensures a valid relative distribution of points. As an additional robustness test of our results, we restrict the sample to participants who fulfill the condition $\sum p_{Cat,i} = \Delta$ in appendix A.2.

to categories are not equivalent to contributions in units of life satisfaction. Hence, we use *the* following estimation approach to calculate the contribution*s* of categories.

First, we run the regression:

$$\Delta_i = \beta_1 \frac{p_{\text{Economic Situation},i}}{\text{Responsiveness}_i} + \beta_2 \frac{p_{\text{Personal Freedom},i}}{\text{Responsiveness}_i} + ... + \beta_6 \frac{p_{\text{Other Factors},i}}{\text{Responsiveness}_i} + \varepsilon_i$$

with

$$\text{Responsiveness}_i = \max\{1, \frac{|\sum p_{Cat,i}|}{\max\{1, |\Delta_i|\}}\}.$$

Then, we compute the total contribution of each category for the total change in life satisfaction as fitted values, denoted by $\hat{c}_{Cat,i}$. To this end, we multiply the estimated coefficients by the 'normalized' points attributed to each category:

$$\hat{c}_{Cat,i} = \beta_{Cat} \frac{p_{Cat,i}}{\text{Responsiveness}_i}.$$

The value of each category $\hat{c}_{Cat,i}$ is interpreted as the quantitative effect of changes in the respective category for the total change in life satisfaction. This concludes the decomposition of the change in life satisfaction into different categories.

The following elements are noteworthy on our estimation approach. First, the 'Responsiveness' factor defined above accounts for the fact that some participants distribute more points to categories than others do, *given the same change in life satisfaction* Δ. Dividing by 'Responsiveness' corrects for this and 'normalizes' the replies, keeping the estimation unbiased. Note that the 'Responsiveness' factor as defined here is monototonic. The introduction of this factor works toward our main goal of a precise estimation of contributions.[12] Second, we do not use a constant term in our estimation approach. In theory, contributions should add up to the total change in life satisfaction as we included the unspecific category 'Other Factors.'[13] Finally, we impose one further consistency restriction on our dataset: participants with a strictly negative (positive) change in life satisfaction are required to distribute a negative (positive) sum of points to categories, i.e. $\sum p_{Cat,i} \leq (\geq) 0$ for $\Delta < (>) 0$. Participants with a zero change in life satisfaction should, in theory, distribute a sum of positive and negative points that add to zero. We require that participants broadly reply in line with theory, specifically that sum of points to categories does not depart by more than three points from zero, i.e. $|\sum p_{Cat,i}| \leq 3$ for $\Delta = 0$.[14]

[12] Evidently there is some arbitrariness in how to carry out this normalization. We concluded that the choice here is most plausible, but we confirmed that other reasonable alternatives (including not correcting for responsiveness at all) yields qualitatively similar results.

[13] The following results justify our estimation approach: coefficients are close to 1, an inclusion of a constant term would lead to an estimate of the constant term close to 0, and the predictive power is high ($R^2 = 0.89$). For a qualitatively similar econometric approach that imposes less structure on the estimation equation and does not include the two elements discussed, we refer to appendix A.2.

[14] The consistency restriction is violated by 28.8 percent of participants that are subsequently

3 Results

As discussed, we restrict our analysis to participants whose replies allow for a meaningful calculation of contributions throughout our analysis. This leaves us with 3,141 observations. Results for this data selection choice are robust to other selection choices (for an analysis of the complete sample, refer to appendix A.2).

3.1 The change in subjective life satisfaction

We find a large significant decrease of 1.38 points between remembered subjective life satisfaction in January 2020 and remembered subjective life satisfaction in April 2020 (Wilcoxon signed-rank test: $p < 0.01$).[15] This corresponds to an average decrease of 22 percent of the pre-crisis level, or equivalently, to 15 percent of the maximum possible change. We find that 25.5 percent of the participants report a strong decrease of 3 points or more, 39 percent a minor decrease of 1 or 2 points, 22 percent report no change in life satisfaction, and 13.5 percent report an increase in life satisfaction. Note that the fourth group is different from the other three groups as these participants start out from a low level of life satisfaction in January 2020 (5.5 points vs. 7-8 points in the other groups). Women exhibit a larger decrease in life satisfaction than men do (1.53 vs. 1.22 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). Moreover, participants that feel more restricted by the preventive measures against the pandemic than by the health risks of the virus itself report a larger reduction in subjective life satisfaction than participants who feel more restricted by the virus itself (1.79 vs. 1.10 points, Wilcoxon-Mann-Whitney test: $p < 0.01$).

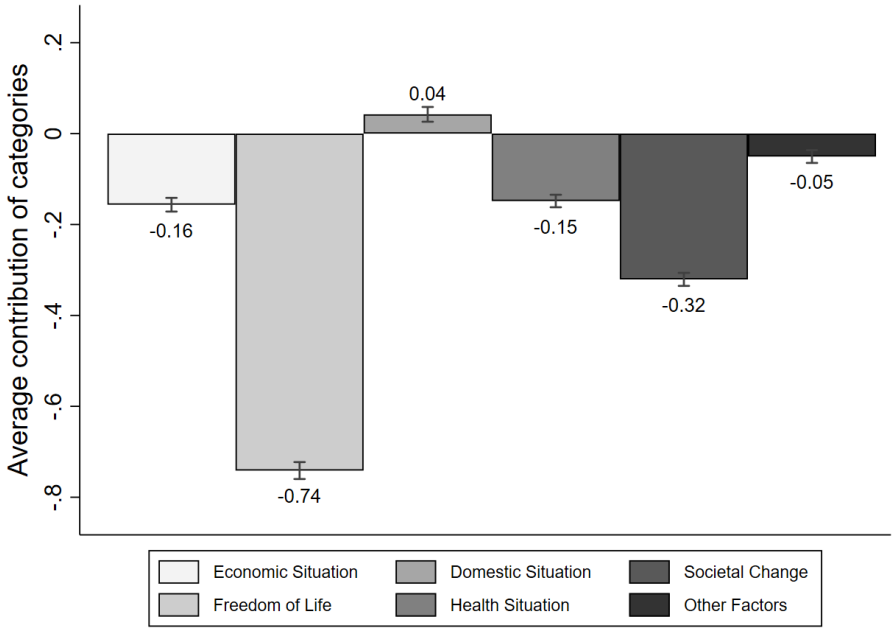
3.2 Decomposition of the change in subjective life satisfaction

We now come to the central research question of this paper, the decomposition of the overall change in life satisfaction into different categories of effects. We use a difference-in-difference approach, i.e. we asked participants for the contribution of changes in each category for the total change in life satisfaction. Note that this allows for both positive and negative changes in the respective category.

Figure 1 shows the average contribution in points of life satisfaction of each category as outlined in section 2.3. The most immanent factor of the pandemic, namely risks to one's health and a deterioration of the health care system as summarized in the category 'Health Situation,' contributes only moderately to the decrease in life satisfaction. On average, the health-induced decrease in life satisfaction amounts to 0.15 points, or equivalently, *to* 2.3 percentage points of the pre-crisis level. The same finding holds for the 'Economic Situation,' the

excluded (1,270 out of 4,411 participants). For an estimation of contributions in the complete sample, we refer to appendix A.2. Results are robust to other selection choices.

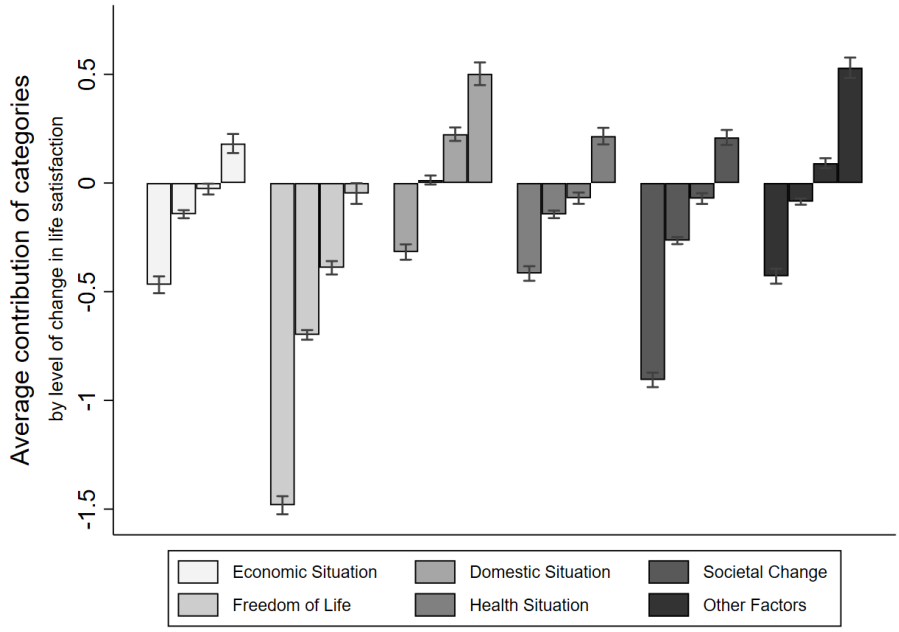
[15] The reduction for the restricted sample is slightly larger than the reduction of 1.10 points in the complete sample.



Note: Bars show average contribution of respective category to the average change in life satisfaction. Contributions are measured in units of life satisfaction. Error bars indicate mean +/- standard errors.

Figure 1: Average contribution of different categories to subjective change in life satisfaction.

deterioration of which contributes 0.16 points to the decrease in life satisfaction, on average. In contrast, changes to the freedom of life such as traveling or meeting with friends lead to a strong decrease in life satisfaction. The average contribution to the decrease is 0.74 points (or 11.6 percentage points of the pre-crises level). Hence, the category 'Personal Freedom' dominates all other categories and accounts for 53 percent of the total reduction in life satisfaction. Moreover, participants have a negative outlook on societal changes (e.g. continued restrictions or reforms), which amounts to a reduction of life satisfaction by 0.32 points. Changes attributed to the 'Domestic Situation' have a marginal positive impact of 0.04 points, while changes to 'Other Factors' lead to a decrease in life satisfaction by 0.05 points. Note that 'Other Factors' aggregates diverse miscellaneous factors into one category. Hence, participants are not only constrained to the five specified categories, which should ensure a valid relative distribution of points. Moreover, taking averages here can cloud the fact that some participants might suffer from a deterioration whereas others might benefit from an improvement in certain categories.



Note: Bars show contribution of respective category to the change in life satisfaction by the level of change in total life satisfaction. For each category, the left bar refers to the group with a strong reduction in life satisfaction, the center left bar refers to the group with a minor change in life satisfaction, the center right bar refers to the group with a zero change in life satisfaction, and the right bar refers to the group with an increase in life satisfaction. Contributions are measured in units of life satisfaction (min. 1 point, max. 10 points). Error bars indicate mean of respective group +/- standard errors.

Figure 2: Contribution of different categories to subjective change in life satisfaction by level of change in life satisfaction.

Figure 2 displays the contribution of different categories in a further subdivision of the sample into (i) subjects with a strong loss in life satisfaction (-3 points or more, left bar), (ii) subjects with a small loss in life satisfaction (-2 or -1 points, center left bar), (iii) subjects with no change in life satisfaction (0 points, center right bar) and (iv) subjects with an increase in life satisfaction (1 point or more, right bar). This subdivision uncovers some effects that cancel out in the aggregate picture. In general, subjects with an increase in life satisfaction report a positive contribution of the different categories to their change in life satisfaction, whereas subjects with a decrease in life satisfaction report a deterioration in the different categories. An exception is the category 'Personal Freedom,' for which all participants assign a negative contribution independent of their total change in life satisfaction. However, the negative contribution

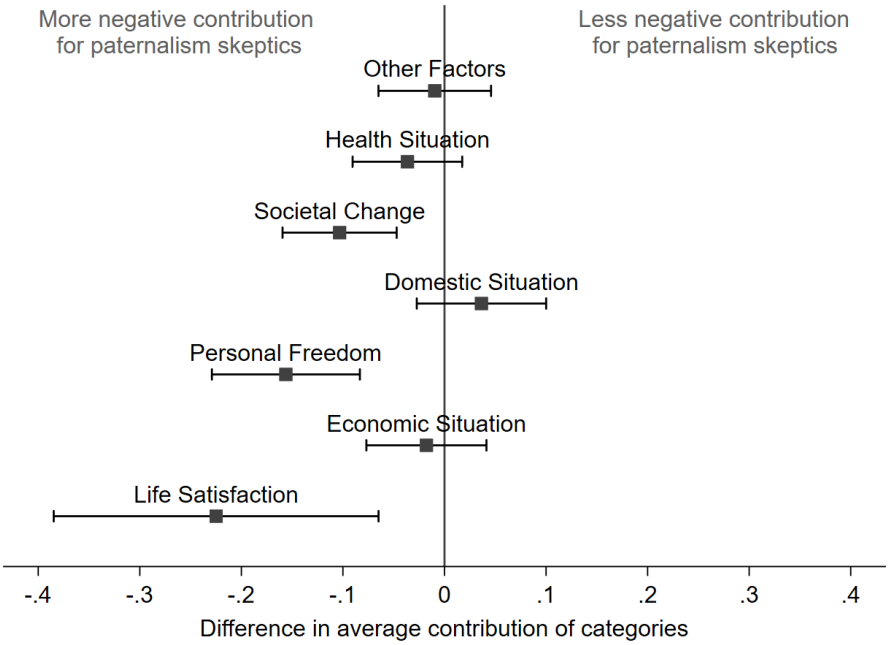
amounts to almost 1.5 points for subjects with a strong decrease in life satisfaction, but only to 0.05 points for subjects with an increase in life satisfaction.[16] This suggests that the strong average contribution of this category mainly comes from participants with a strong or minor decrease in life satisfaction. Findings for the category 'Societal Change' go in a similar direction, but the size of the contribution is roughly one-half of the contribution of 'Personal Freedom' and some participants even have a positive outlook on societal changes. For both the 'Economic Situation' and the 'Health Situation,' our findings suggest that there are winners and losers in terms of life satisfaction. The contribution ranges from negative 0.47 points to positive 0.22 points and indicates a limited effect of these categories. Except for participants with a strong loss in life satisfaction, the 'Domestic Situation' (weakly) improved in all four subgroups. The positive contribution amounts to 0.5 points for participants with an increase in life satisfaction, which corresponds to 24 percent of their average total increase. Finally, the quantitative importance of 'Other Factors' for participants with an increase in life satisfaction may indicate that this increase is caused by individual factors unrelated to Covid-19 pandemic events (0.53 points or 25 percent of the total change).

3.3 The individual preference for paternalistic interventions

The second innovation of this paper is the introduction of the Governmental Paternalism Index, which measures the preference for paternalistic governmental interventions on the basis of a factor analysis of a sample of 11 statements (for a description see section 2.1 and appendix A.1). The index describes and quantifies the preference of the individual with regard to the trade-off between the desire to choose and to decide what risks to take, and the desire to be protected by the state from dangers arising from one's own behavior. The governmental restrictions to personal freedoms during the Covid-19 pandemic provide us with an opportunity to test the validity of the Governmental Paternalism Index. As discussed in section 2.2, it is reasonable to assume that subjects who are less prone to, or more averse to governmental interventions attribute a larger negative contribution to the category 'Personal Freedom' than participants do who welcome such interventions.

In a first step, we divide the sample into the half of participants who tend to be more negative towards governmental interventions in their private life and have an index value below the median, and into the other half of participants who are more favorable toward*s* these interventions and have an index value above the median. We then compute the average difference in the contribution of the diverse categories to the change in life satisfaction between both groups,

[16] In order to be able to classify the size of these effects, they can be compared with estimates of the effects of severe misfortunes such as the transition to unemployment or a divorce. The broad study by Eichhorn (2013, p.1671) finds that "being unemployed was associated with substantially lower levels of life-satisfaction (-0.761 to -0.785 points lower than those employed)," admittedly with huge inter-country variation and larger effects for Germany.



Note: Difference in the contribution of different categories in units of life satisfaction between participants with a preference for governmental paternalism below and above the median. Solid vertical line at 0 represents a zero difference, i.e. a similar contribution to the change of life satisfaction in both groups. Differences to the left indicate a smaller (more negative) contribution of the category for subjects with a paternalism preference below the median, differences to the right a larger (less negative) contribution for this group. Squares indicate mean difference, error bars indicate the 95% confidence interval.

Figure 3: Intermedian difference of participants with a preference for paternalism below and above the median for the change in life satisfaction and the contribution of different categories.

i.e. $\Delta c_{Cat} = \bar{c}_{Cat,below} - \bar{c}_{Cat,above}$. Figure 3 plots these differences including the measured difference in the change of life satisfaction between both groups. It shows that the change in life satisfaction for participants with paternalistic preferences below the median, i.e. those who tend to be negative towards the governmental interventions, have a larger reduction of life satisfaction as compared to the half of participants who are more favorable toward these interventions. The difference of -0.225 points is significantly smaller than zero (Wilcoxon-Mann-Whitney test: $p = 0.01$). This difference between both groups seemingly is explained to a large degree by the contribution of the category 'Personal Freedom.' The half of participants who look less favorably at paternalistic interventions attribute a larger negative contribution to the category

'Personal Freedom' as compared to the other half (-0.155 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). We also find a negative difference for the category 'Societal Change,' but the magnitude of this difference is smaller (-0.10 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). In contrast, we do not find any significant difference for the categories 'Economic Situation,' 'Domestic Situation,' 'Health Situation,' or 'Other Factors' (Wilcoxon-Mann-Whitney test: $p = 0.25$, $p = 0.47$, $p = 0.98$, and $p = 0.70$), and the point estimates are close to zero in each of these categories.[17] In summary, the difference in life satisfaction due to preferences for paternalistic interventions is primarily mediated by the category 'Personal Freedom' and secondary by the category 'Societal Change.' Hence, these results are in line with our expectation and indicate that the Governmental Paternalism Index has predictive power along the freedom dimension.[18,19]

Now we take a closer look at the correlates to the category 'Personal Freedom.' Table 1 shows results of a multivariate analysis with the estimated contribution of this category (measured in units of life satisfaction) as the dependent variable. In the baseline specification (column (1)), the preference for paternalistic interventions is significantly and positively correlated to the contribution of this category. The smaller the preference for paternalism, the more negative is the contribution of personal freedom to the change in life satisfaction.[20] The marginal effect of moving from the ninth to first the decile of the Governmental Paternalism Index is a loss of 0.24 points of life satisfaction, and from moving from the third to the first quantile is a loss of 0.12 points of life satisfaction. This correlation is robust to diverse robustness specifications (column (2) to (4)). Inclusion of the set of basic control variables reveals that women as well as persons in a relationship (as opposed to singles) attribute a larger loss in life satisfaction to this category. A higher income is also related to a larger negative contribution, whereas a previous infection with Covid-19 is associated with a smaller negative contribution. Column (3) includes an enlarged set of control variables, which leaves our estimated correlations unchanged.

Column (4) employs two personality traits as further control variables. One personality trait is 'Psychological Reactance' that was briefly described in the Introduction as a disapproval to being lectured or patronized by others. We

[17] A priori, we only had a hypothesis regarding the correlation of the preference for paternalistic interventions and (i) life satisfaction, and (ii) the contribution of the category 'Personal Freedom.'

[18] 'Societal Change' might measure concerns about loss of personal freedom in the future, but also other aspects of life. Decomposition of this composite characteristic is an interesting topic for future research, but was not the focus of this study.

[19] The score in the Governmental Paternalism Index is also negatively correlated to self-reported compliance with implemented regulations to contain the spread of the virus ($corr = -0.15$). Hence, the Governmental Paternalism Index might indicate compliance with such governmental measures in general.

[20] Formulated differently, the positive coefficient on 'Paternalism' indicates a larger (more positive) contribution of the category 'Personal Freedom' the more a participant is in favor of paternalistic governmental interventions. However, as our results on the different subgroups indicate, changes to personal freedom predominantly contributed negatively to the change in life satisfaction.

VARIABLES	(1)	(2)	(3)	(4)
Paternalism	0.109***	0.100***	0.083***	0.083***
	(0.018)	(0.021)	(0.022)	(0.023)
Reactance				0.022
				(0.021)
Locus of Control				0.138***
				(0.022)
Female		-0.185***	-0.184***	-0.169***
		(0.034)	(0.029)	(0.033)
Age		0.001	0.001	0.001
		(0.001)	(0.001)	(0.001)
Marital Status		-0.096**	-0.124**	-0.077*
		(0.043)	(0.044)	(0.041)
Household Income		-0.052***	-0.047***	-0.041***
		(0.013)	(0.015)	(0.013)
Infection		0.608***	0.547***	0.562***
		(0.121)	(0.131)	(0.117)
Further Control Variables	NO	NO	YES	NO
Constant	-0.741***	-0.396***	-0.448***	-0.463***
	(0.013)	(0.101)	(0.121)	(0.097)
Observations	3,141	3,141	2,954	3,141
R^2	0.008	0.031	0.034	0.041

Notes: The table presents results of an ordinary least squares (OLS) regression. The dependent variable is the contribution of subjective changes to the personal freedom of participants to the total change in life satisfaction between January 2020 and April 2020. 'Paternalism' refers to the individual preference for (paternalistic) governmental interventions, 'Reactance' is the individual score based on the Hong Psychological Reactance Scale, and 'Locus of Control' is the individual score based on Kovaleva et al.(2012). Control variables include a dummy for female participants ('Female'), participants' age ('Age'), the marital status ('Marital Status'), categorized household income ('Household Income'), and a dummy for an infection with COVID-19 ('Infection'). Robust standard errors clustered at the state level in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Table 1: Multivariate analysis for the contribution of the category personal freedom.

rely on Hong and Page's (1989) questionnaire to measure this trait. As a second personality trait we use 'Locus of Control' as conceptualized by Kovaleva et al. (2012). It was loosely characterized as the extent to which a person believes that the course of life largely depends on one's own actions rather than on chance or the actions of others. Both personality traits are positively related to the absolute contribution of the category personal freedom to the overall change in life satisfaction. Hence, participants with higher reactance and who feel having more self-control over their lives attribute a larger negative contribution to the category 'Personal Freedom.' However, the coefficient on psychological reactance fails to reach significance. More importantly, the coefficient on the paternalism preference remains qualitatively and quantitatively unaffected to the inclusion of both indices. This indicates that the three scores capture different concepts, and is in line with the low correlation of the paternalism index to psychological reactance ($corr = 0.18$) and to the locus of control ($corr = 0.12$). Hence, we measure different individual attitudes that are not explained by the two specific personality traits developed in psychology. Rather, the new index captures the relationship between the individual and the State.

4 Discussion and Conclusion

Most democratic constitutions consider the basic human right of physical integrity along with rights of fundamental freedom as inalienable rights. However, neither of these rights are absolute in the sense that they overrule all other rights. This becomes relevant when different fundamental human rights stand in conflict with each other. Examples may include war times, natural catastrophes, terrorism, or as studied in this paper, the adverse effects of a pandemic. In these circumstances, various branches of the government need to trade-off some of the conflicting fundamental rights. Measures taken must be suitable, appropriate and commensurate. The disadvantages of a measure are not allowed to be out of proportion relative to its benefits. However, some these disadvantages or costs might be difficult to measure. This makes measures of value attributed to personal freedom interesting both from an epistemological perspective and from a policy point of view.

We propose the contribution to changes in life satisfaction to be such a measure. We show that restrictions to personal freedoms are costly in terms of life satisfaction: as measured in the first quarter of the 2020 pandemic they account for roughly half of the total reduction in life satisfaction, or 12 percentage points of the pre-pandemic level of life satisfaction in January 2020. This is a large effect, which size is comparable to other major events in life such as unemployment, marriage, or divorce. Moreover, we find that restrictions to personal freedoms have negative impact independent of the actual overall change in life satisfaction. In contrast, crisis effects on other domains of life do not have as large effects on the life satisfaction of participants and we find more heterogeneity in these domains. For example, while the domestic situation deteriorated for those with a pronounced decrease in life satisfaction, it improved life satisfaction

for those with a zero or positive change in life satisfaction. Compared to the effect of restrictions of personal freedom both changes to the economic situation and to the health situation only had a small negative impact on life satisfaction on average.

A liking of personal freedom need not be taken as a primitive and one might search for factors explaining why some individuals care more about personal freedom than others. We trace this heterogeneity further and identify several correlates. Two common personality traits correlate positively with the life-satisfaction loss from reduced personal freedom: 'reactance' and 'locus of control.' A further and new factor developed here is an index measuring the preference for governmental laws and regulations to ban potentially adverse or self-harming behavior in the private domain. We call this index the 'Governmental Paternalism Index.' The index addresses to which degree an individual is willing to delegate personal decisions to the government that she could also very well take for herself. Examples of past interventions may include anti-smoking campaigns or regulations to reduce traffic casualties such as the obligation to wear seatbelts. We find that this index has considerable explanatory power for how individuals assessed the freedom-restricting measures that the government took to contain the pandemic. The Governmental Paternalism Index might prove useful in many contexts other than governmental interventions in the course of a pandemic. The index value might have explanatory power for voting behavior for political party preferences. It could also be of interest to assess how this index differs regionally or over time, different age cohorts or other dimensions of social stratification. Our results indicate that this 'social trait' on the individual-to-state relationship is both measurable and indicative of actual behavior.

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Appendix A.1 Supplementary Analyses of Indices

Construction of the Governmental Paternalism Index

For the Governmental Paternalism Index, we compose a set of 11 statements and we use the respondents' agreement or disagreement to these statements to measure the position of the individual participant with regard to the trade-off between the desire to choose and decide what risks to take, and the desire to be protected by the state from dangers arising from one's own behaviour. We include different potential governmental interventions aiming at the health dimension, safety concerns, optimal savings decisions, or self-responsibility in general. For each statement, participants have to indicate whether they fully agree (score = 1), rather agree (score = 2), neither agree nor disagree (score = 3), rather disagree (score = 4), or fully disagree (score = 5). The score for reversed items is reversed, i.e., converted by six minus the original score. We conduct a factor analysis to condense the individual answers and to a single index value. The statements are as follows:

1.	The state should ban unhealthy food. (*reversed score*)
2.	The state should consistently protect us from drug abuse. (*reversed score*)
3.	When and how much I save for retirement I would like to decide entirely on my own.
4.	Everyone should decide for himself/herself whether he/she will wear a bicycle helmet.
5.	The state is overdoing it with the large number of building regulations.
6.	Old vehicles with low energy efficiency should have their operating license revoked in the medium term. (*reversed score*)
7.	Everybody should have the right to do things that can harm himself/herself.
8.	Behaviors that endanger people themselves should be banned. (*reversed score*)
9.	Nobody knows better than myself what is good for me.
10.	The most important task of the state is to protect me comprehensively from dangers of any kind. (*reversed score*)
11.	I would like to see the state relieve us citizens of more tasks and responsibilities. (*reversed score*)

Table 2 shows results of the factor analysis for the Governmental Paternalism Index. We find one factor with an eigenvalue larger than 1 and retain this factor according to the eigenvalue-criterion. While factorloadings on all items have the expected sign, we find six items with a loading of approximately 0.5 or higher.

	Factor1	Factor2	Factor3	Factor4	Factor5
Eigenvalues	2.2966	0.8903	0.2319	0.0954	0.0797
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Item 1	0.4768	-0.1357	0.0703	0.0086	0.1722
Item 2	0.5282	-0.2068	-0.1057	0.0589	0.0645
Item 3	0.0843	0.4797	0.1018	-0.0731	-0.0057
Item 4	0.3318	0.2810	-0.1543	0.1211	-0.0553
Item 5	0.2036	0.3828	0.0008	0.1618	-0.0445
Item 6	0.3286	0.1726	0.2063	0.1074	0.1052
Item 7	0.6250	0.1303	-0.2274	-0.0978	-0.0127
Item 8	0.7402	-0.0892	-0.0621	-0.0771	0.0103
Item 9	0.2077	0.4837	0.0589	-0.1121	0.0145
Item 10	0.5699	-0.2571	0.0818	0.0533	-0.1402
Item 11	0.4659	-0.1369	0.2708	-0.0566	-0.0980

Table 2: Eigenvalues (upper part) and factorloadings (lower part) for Governmental Paternalism Index.

The common factor explains a somewhat lower share of the variance of item 3, item 5 and item 9. We then use the estimated weights of the statements for this factor to calculate each individual's Governmental Paternalism Index. For robustness, we also compute an index value based on the aggregate score of all items. Both index values are highly correlated ($corr = 0.94$) and lead to qualitatively similar results in our main analysis (see section 3).

Construction of the Reactance Index

In our survey, we used the 14-item version by Hong and Page (1989) to elicit the well-established measure of psychological reactance. The intuition is that individuals who refuse any interference in their personal life and who are skeptical towards authorities may suffer more from the restrictions to personal freedom in course of the 2020 pandemic.

Table 3 shows results of the factor analysis for the reactance index. We find one factor with an eigenvalue considerably larger than 1, and one factor with an eigenvalue close to 1. We retain only one factor according to the previous literature (Windsteiger et al. 2020). Factorloadings on all items have the expected sign and range between 0.45 and 0.65.

Analysis Reactance Index

The following analysis parallels parts of the main analysis in section 3.3 for the psychological reactance index. For the estimation of the relationship of psychological reactance and the contribution of the category 'Personal Freedom,' please refer to specification (4) in table 1.

Figure 4 plots the intermedian difference according to psychological reactance for the change in life satisfaction and the contribution of the different

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Eigenvalues	4.3061	0.9970	0.2008	0.1499	0.0571	0.0328	0.0216

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Item 1	0.6384	-0.2157	-0.1599	0.0471	0.0325	0.0041	-0.0602
Item 2	0.4504	-0.2223	-0.0835	0.0659	0.1139	0.0269	0.0364
Item 3	0.6102	-0.4325	-0.1057	-0.0074	0.0178	-0.0045	0.0305
Item 4	0.5297	0.2952	-0.1160	0.0685	0.0430	-0.0173	-0.0330
Item 5	0.5223	-0.0739	0.2284	0.1608	-0.0113	0.0398	-0.0366
Item 6	0.5685	0.3621	-0.1130	0.1323	-0.0270	0.0055	0.0307
Item 7	0.4682	0.2360	0.1518	0.1594	0.0227	-0.0407	0.0363
Item 8	0.4850	0.2742	-0.1008	-0.0344	-0.1061	-0.0167	0.0341
Item 9	0.6207	-0.3894	0.1473	-0.0084	-0.0699	0.0294	0.0292
Item 10	0.5482	0.2033	-0.0318	-0.1006	-0.0660	0.1047	0.0070
Item 11	0.5424	0.2036	0.0701	-0.1478	0.0836	0.0646	-0.0299
Item 12	0.5558	0.2485	0.1224	-0.1246	0.0377	-0.0693	-0.0315
Item 13	0.6296	-0.0833	0.0421	-0.1444	0.0365	-0.0610	0.0564
Item 14	0.5541	-0.2372	-0.0327	-0.0143	-0.0964	-0.0602	-0.0625

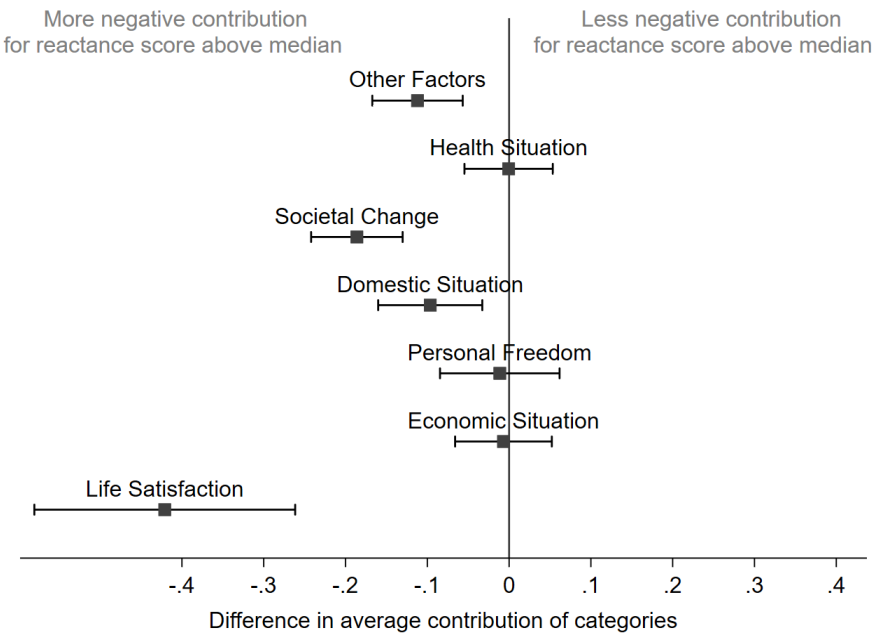
Table 3: Eigenvalues (upper part) and factorloadings (lower part) for Reactance Index.

categories hereunto (compare to Figure 2 in section 3.3). Participants with psychological reactance above the median have a larger loss in life satisfaction than those below the median. The difference amounts to 0.41 points. For the contribution of the different categories, 'Societal Change' is the most prominent difference for psychological reactance (0.19 points, Wilcoxon-Mann-Whitney test: $p < 0.01$), followed by 'Other Factors' and the 'Domestic Situation' (0.11 and 0.10 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). In contrast, the difference for the other categories is close to zero in absolute points of life satisfaction. This also holds for the category 'Personal Freedom,' which difference is not significantly different from zero (Wilcoxon-Mann-Whitney test: $p = 0.60$).

Construction of the Locus of Control

A third trait that might be correlated to the change in life satisfaction and the importance of personal freedom is the degree to which participants perceive the the course of their life mainly an outcome of their own actions and choices. This personal trait is measured by the locus of control. We rely on the four-item version by Kovaleva et al. (2012).

Table 4 shows results of the factor analysis for the locus of control. We find one factor with an eigenvalue larger than 1 and retain this factor according to the eigenvalue-criterion. Factorloadings on all items have the expected sign and range between 0.45 and 0.60 in absolute size.



Note: Difference in the contribution of different categories in units of life satisfaction between participants with a reactance score above and below the median. Solid vertical line at 0 represents zero difference, i.e. a similar contribution to the change of life satisfaction in both groups. Differences to the left indicate a smaller (more negative) contribution of the category for subjects with a reactance score above the median, differences to the right a larger (more positive) contribution for this group. Squares indicate mean difference, error bars indicate the 95% confidence interval.

Figure 4: Intermedian difference of participants with psychological reactance above and below the median for the change in life satisfaction and the contribution of different categories.

Analysis Locus of Control

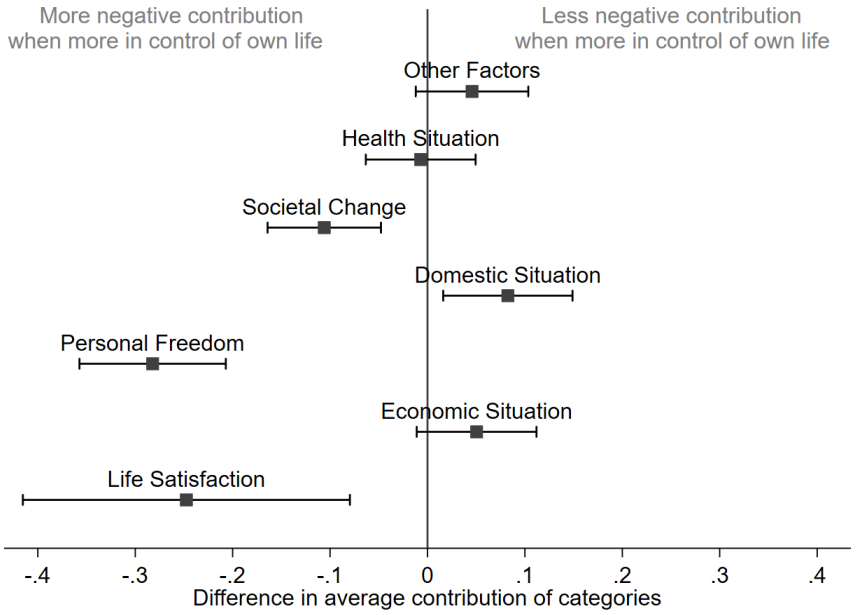
The following analysis is analogous to parts of the main analysis in section 3.3, for the locus of control. For the estimation of the relationship of locus of control and the contribution of the category 'Personal Freedom,' please refer to specification (4) in table 1.

Figure 5 plots the intermedian difference between the share of persons who feel more strongly that they are in control of their life course for the change in life satisfaction and the contribution of the different categories hereunto (compare to Figure 2 in section 3.3). Participants whose feelings about being in control are above the median have a larger loss in life satisfaction than those below the median (0.25 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). The difference

	Factor1	Factor2
Eigenvalues	1.2658	0.1486

	Factor1	Factor2
Item 1	0.6044	0.1793
Item 2	0.5919	0.1683
Item 3	-0.5893	0.1636
Item 4	-0.4504	0.2477

Table 4: Eigenvalues (upper part) and factorloadings (lower part) for Locus of Control.



Note: Difference in the contribution of different categories in units of life satisfaction between participants with a locus of control score above and below the median. Solid vertical line at 0 represents zero difference, i.e. a similar contribution to the change of life satisfaction in both groups. Differences to the left indicate a smaller (more negative) contribution of the category for subjects with a locus of control index above the median, differences to the right a larger (more positive) contribution for this group. Squares indicate mean difference, error bars indicate the 95% confidence interval.

Figure 5: Intermedian difference of participants with locus of control above and below the median for the change in life satisfaction and the contribution of different categories.

in the contribution of the different categories follows broadly a similar pattern as the intermedian difference for governmental paternalism. Participants who feel to be in control of their lives themselves attribute a larger negative contribution to the category 'Personal Freedom' (Wilcoxon-Mann-Whitney test: $p < 0.01$). The difference of 0.28 points of life satisfaction in this category even outweighs the difference in the total change in life satisfaction. A similar finding holds for the category 'Societal Change,' even though the magnitude is smaller (0.10 points, Wilcoxon-Mann-Whitney test: $p < 0.01$). Participants who feel more in control for their lifes attribute less negative points to the categories 'Domestic Situation,''Economic Situation,' and 'Other Factors' (0.08 points, 0.05 points, and 0.05 points, Wilcoxon-Mann-Whitney test: $p = 0.17$, $p = 0.10$, and $p = 0.01$). In contrast, we do not find a relevant difference for the category 'Health Situation.'

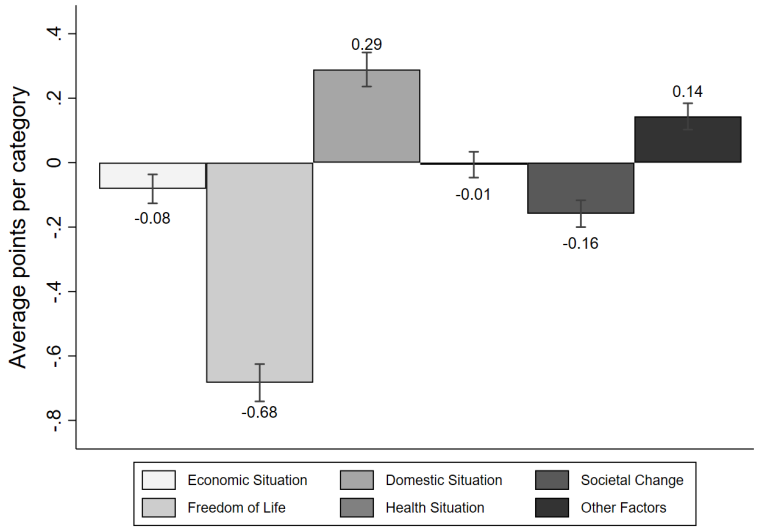
Appendix A.2 Robustness Analysis

Contribution of categories in more restricted data set

Econometric approach

As described in section 2.3, we did not impose the restriction that the sum of points distributed to categories equals the change in life satisfaction, i.e. we allow for $\sum p_{Cat,i} \neq \Delta$. This is the reason why we need an estimation procedure to calculate the contribution of categories. However, for some of the participants, the sum of points distributed to categories matched their indicated change in life satisfaction. In these cases, each point distributed to a category is equivalent to a one-point change in life satisfaction. Hence, the average contribution of a category is equivalent to the average number of points distributed to the respective category. This provides us with a robustness test for the validity of our estimation approach in the main analysis in a strongly reduced sample ($N = 467$).

Robustness results



Note: Bars show average contribution of respective category to the average change in life satisfaction. Contributions are measured in units of life satisfaction. Error bars indicate mean +/- standard errors.

Figure 6: Average contribution of different categories to subjective change in life satisfaction in restricted sample.

Due to the strong reduction in the sample size, we only show the robustness

of the average contribution of categories here. On average, the remembered life satisfaction decreases by 0.50 points between January 2020 and April 2020 in the restricted sample (Wilcoxon signed-rank test: $p < 0.01$). This compares to a stronger reduction of 1.38 points in the main analysis.

Figure 6 shows the average contribution of categories to the change in life satisfaction. Most importantly, the category 'Personal Freedom' turns out to be the key category, and its average negative contribution even outweighs the average reduction in life satisfaction. Surprisingly, the quantitative size of the effect is with -0.68 points very close to the estimate of -0.74 points in the main analysis. Also qualitatively in line with main results is the negative contribution of the category 'Societal Change,' even though the effect size is only one half. In contrast, the category 'Health Situation' does not significantly contributes to the change in life satisfaction, while the average positive contribution of the category 'Domestic Situation' is much larger as compared to the main results. Moreover, 'Other Factors' contribute positively to the change in life satisfaction in the restricted sample. Nevertheless, our main results are qualitatively in line with these robustness results even in the drastically reduced sample.

Estimation approach with less structured regression

Econometric approach

As described in section 2.3, the goal of our estimation approach was a precise calculation of the contribution of each category for the aggregate change in life satisfaction. Therefore, we normalized the points attributed to each category by the participant's responsiveness, i.e. by the ratio of the sum of points distributed to the total change in life satisfaction. For theoretical reasons, we also used a regression framework without constant term. In this appendix, we apply a less structured approach and show the robustness of results in the restricted sample of the main analysis ($N = 3,141$).

We closely follow the estimation procedure in section 2.3, but use following regression framework instead:

$$\Delta_i = \beta_0 + \beta_1 p_{\text{Economic Situation},i} + \beta_2 p_{\text{Personal Freedom},i} + ... + \beta_6 p_{\text{Other Factors},i} + \varepsilon_i$$

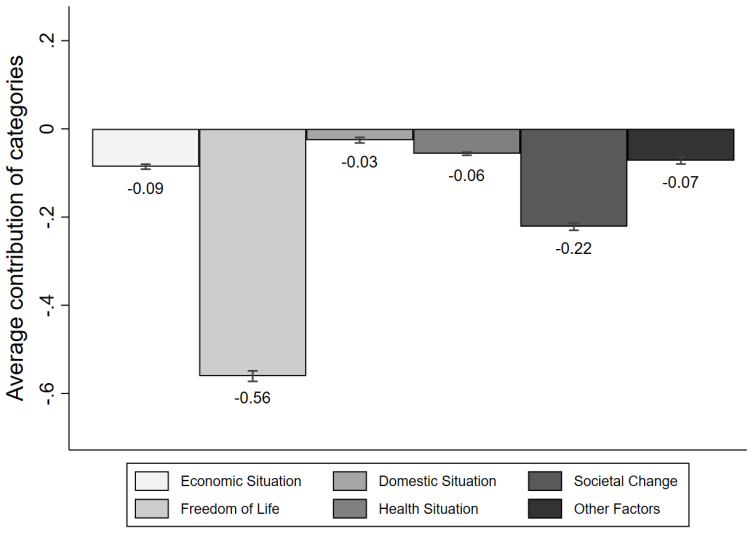
Subsequently, we once again estimate the contribution of each category to the change in life satisfaction as fitted values:

$$\hat{c}_{Cat,i} = \beta_{Cat} p_{Cat,i}.$$

Robustness results

As we do not change the sample, results for section 3.1 remain unaffected.

For section 3.2, results are qualitatively similar and stable in quantitative terms. Figure 7 displays the estimated contributions of categories for the change in life satisfaction, using the less structured estimation approach. The main difference to the structured approach in the main analysis are the slightly smaller



Note: Bars show average contribution of respective category to the average change in life satisfaction. Contributions are measured in units of life satisfaction. Error bars indicate mean +/- standard errors.

Figure 7: Average contribution of different categories to subjective change in life satisfaction with linear regression estimation approach.

contributions in absolute terms. However, changes the 'Personal Freedom' prove to be the main component for the loss in life satisfaction, followed by a negative outlook on 'Societal Change.' All other categories contribute only little to the change in life satisfaction on average. For the further subdivision by the magnitude of change in life satisfaction, we also qualitatively confirm our results from the main analysis. In particular, all categories contribute negatively to the change in life satisfaction for those who have a loss in life satisfaction (with 'Personal Freedom' having the strongest effect), while the pattern reverses for those with an increase in life satisfaction.

For section 3.3, the more skeptic half of participants toward paternalistic governmental interventions incur a larger loss in life satisfaction. As in the main analysis, this difference can be attributed primarily to a more negative contribution of the category 'Personal Freedom,' and secondary to a more negative contribution of the category 'Societal Change.'

Finally, Table 5 shows the robustness of our results for the multivariate analysis with the estimated contribution of this category 'Personal Freedom' (measured in units of life satisfaction) as the dependent variable. In all specifications, the preference for paternalistic interventions is significantly and positively correlated to the contribution of this category. The smaller the preference for

VARIABLES	(1)	(2)	(3)	(4)
Paternalism	0.090***	0.087***	0.080***	0.071***
	(0.013)	(0.014)	(0.015)	(0.016)
Reactance				0.059***
				(0.016)
Locus of Control				0.040**
				(0.015)
Female		-0.158***	-0.154***	-0.156***
		(0.025)	(0.026)	(0.023)
Age		-0.000	-0.000	-0.000
		(0.001)	(0.001)	(0.001)
Marital Status		-0.054	-0.068**	-0.051
		(0.034)	(0.032)	(0.033)
Household Income		-0.012	-0.016*	-0.011
		(0.007)	(0.009)	(0.007)
Infection		0.585***	0.501***	0.591***
		(0.089)	(0.100)	(0.092)
Further Control Variables	NO	NO	YES	NO
Constant	-0.561***	-0.352***	-0.461***	-0.361***
	(0.010)	(0.060)	(0.122)	(0.053)
Observations	3,141	3,141	2,954	3,141
R^2	0.014	0.042	0.042	0.050

Notes: The table presents results of an ordinary least squares (OLS) regression. The dependent variable is the contribution of subjective changes to the personal freedom of participants to the total change in life satisfaction between January 2020 and April 2020. 'Paternalism' refers to the individual preference for (paternalistic) governmental interventions, 'Reactance' is the individual score based on the Hong Psychological Reactance Scale, and 'Locus of Control' is the individual score based on Kovaleva et al.(2012). Control variables include a dummy for female participants ('Female'), participants' age ('Age'), the marital status ('Marital Status'), categorized household income ('Household Income'), and a dummy for an infection with COVID-19 ('Infection'). Robust standard errors clustered at the state level in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Multivariate analysis for the contribution of the category personal freedom.

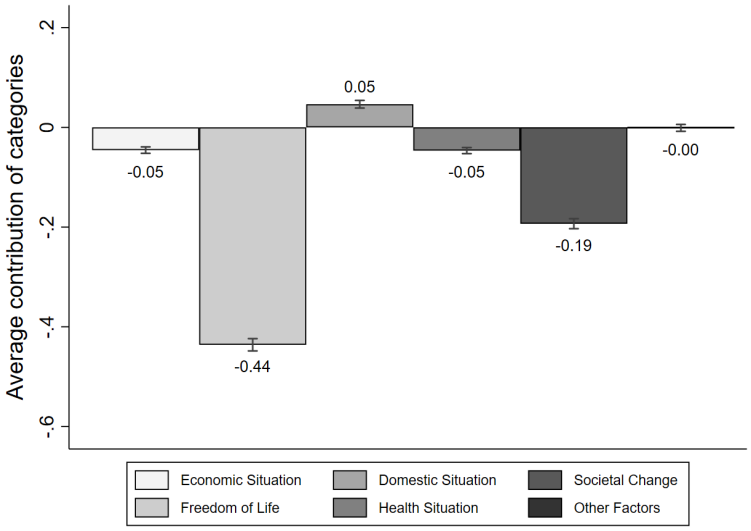
paternalism, the more negative is the contribution of personal freedom to the change in life satisfaction. The effect size is marginally smaller than the effect size in the structured approach. Most importantly, inclusion of the reactance index and the locus of control (specification in column (4)) leave the coefficient on the paternalism preference qualitatively and quantitatively unaffected. Hence, the result that the three indices measure different concepts is also robust.

Analysis of the complete sample

Econometric approach

As outlined in section 2.3, we imposed a consistency requirement for the meaningful calculation of contributions in our main analysis. In this appendix, we show the robustness of our results in the complete sample using the structured approach from the main analysis ($N = 4,411$). Note however, that this adds considerable noise to the estimation of contributions, as we potentially include participants who might have put little effort in answering the survey questions carefully or who might have had problems understanding the set-up.

Robustness results



Note: Bars show average contribution of respective category to the average change in life satisfaction. Contributions are measured in units of life satisfaction. Error bars indicate mean +/- standard errors.

Figure 8: Average contribution of different categories to subjective change in life satisfaction in the complete sample.

For section 3.1, the decrease in the remembered life satisfaction between January 2020 and April 2020 is with 1.10 points slightly smaller as compared to the complete sample. We find that 21 percent of the participants report a strong decrease of 3 points or more, 33.5 percent a minor decrease of 1 or 2 points, 30 percent report no change in life satisfaction, and 14.5 percent report an increase in life satisfaction. Moreover, women have a larger decrease in life satisfaction than men do (0.18 points, Wilcoxon-Mann-Whitney test: $p = 0.01$).

For section 3.2, results are qualitatively similar and overall stable in quantitative terms. Figure 8 displays the estimated contributions of categories for the change in life satisfaction in the complete sample. The main difference to the restricted are the smaller contributions in absolute terms for most categories. The strong negative contribution of the category 'Personal Freedom' is robust, even though the estimated effect size is reduced by approx. 40 percent. A similar finding holds for the category 'Societal Change.' In contrast, the categories 'Economic Situation,' 'Domestic Situation,' 'Health Situation,' and 'Other Factors' contribute only little to the change in life satisfaction. For the further subdivision by the magnitude of change in life satisfaction, we also qualitatively confirm our results from the main analysis.

For section 3.3, the more skeptic half of participants toward paternalistic governmental interventions incur a larger loss in life satisfaction. As in the main analysis, this difference can be attributed primarily to a more negative contribution of the category 'Personal Freedom,' and secondary to a more negative contribution of the category 'Societal Change.' Moreover, the categories 'Economic Situation' and 'Health Situation' also have a marginally larger negative contribution for the more skeptic half of participants in the complete sample.

Finally, Table 6 shows the robustness of our results for the multivariate analysis with the estimated contribution of this category 'Personal Freedom' (measured in units of life satisfaction) as the dependent variable. In all specifications, the preference for paternalistic interventions is significantly and positively correlated to the contribution of this category. The smaller the preference for paternalism, the more negative is the contribution of personal freedom to the change in life satisfaction. The effect size is quantitatively comparable to effect size in the restricted sample. Most importantly, inclusion of the reactance index and the locus of control (specification in column (4)) leaves the coefficient on the paternalism preference qualitatively and quantitatively unaffected, and results are even stronger than in the restricted sample. Hence, the result that the three indices measure different concepts is also robust.

VARIABLES	(1)	(2)	(3)	(4)
Paternalism	0.113***	0.107***	0.093***	0.101***
	(0.015)	(0.017)	(0.016)	(0.018)
Reactance				-0.002
				(0.013)
Locus of Control				0.091***
				(0.013)
Female		-0.134***	-0.119***	-0.122***
		(0.026)	(0.025)	(0.027)
Age		0.001	0.001	0.001
		(0.001)	(0.001)	(0.001)
Marital Status		-0.075**	-0.091**	-0.062*
		(0.032)	(0.032)	(0.032)
Household Income		-0.030***	-0.023**	-0.021**
		(0.009)	(0.011)	(0.009)
Infection		0.377***	0.348***	0.341***
		(0.076)	(0.082)	(0.079)
Further Control Variables	NO	NO	YES	NO
Constant	-0.436***	-0.198**	-0.415***	-0.250***
	(0.009)	(0.072)	(0.076)	(0.071)
Observations	4,411	4,411	4,131	4,411
R^2	0.015	0.031	0.037	0.039

Notes: The table presents results of an ordinary least squares (OLS) regression. The dependent variable is the contribution of subjective changes to the personal freedom of participants to the total change in life satisfaction between January 2020 and April 2020. 'Paternalism' refers to the individual preference for (paternalistic) governmental interventions, 'Reactance' is the individual score based on the Hong Psychological Reactance Scale, and 'Locus of Control' is the individual score based on Kovaleva et al.(2012). Control variables include a dummy for female participants ('Female'), participants' age ('Age'), the marital status ('Marital Status'), categorized household income ('Household Income'), and a dummy for an infection with COVID-19 ('Infection'). Robust standard errors clustered at the state level in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Multivariate analysis for the contribution of the category personal freedom.