Acta Politica
https://doi.org/10.1057/s41269-024-00335-9

ORIGINAL ARTICLE

Spatial proximity matters, predispositions do not: explaining policy preferences for long-term natural disaster mitigation

Mikko Leino[1] · **Juha Ylisalo**[1] · **Staffan Himmelroos**[2]

Accepted: 19 February 2024

Abstract

Voter myopia, the inability and unwillingness of citizens to accept policies whose benefits only materialise over a long period, is often considered an almost inevitable feature of representative democracy. Recent studies have subjected this assumption to empirical scrutiny, but the extent to which variation in political future orientation of citizens is associated with support for alternative policies, with differing temporal profiles of benefits and costs, has remained largely uncharted. Utilising survey data from Finland ($n = 1049$), we study the associations spatial proximity to a regionally relevant problem, flooding and political future orientation have with choices between policy alternatives that distribute benefits differently between generations. We found that, while levels of political future orientation are not a significant determinant of the willingness to invest in the future wellbeing, heightened issue salience linked to geographic proximity to the potential event plays a role in shaping policy preferences.

Keywords Long-term decision-making · Democratic myopia · Natural disaster mitigation · Future generations · Construal level theory

Introduction

In the summer of 2021, severe flooding in Germany and Belgium resulted in more than 200 fatalities and considerable damage to infrastructure in the affected areas. Floods, like most other natural disasters, involve a prominent temporal aspect. Researchers with the World Weather Attribution project (Kreienkamp et al. 2021)

✉ Mikko Leino
molein@utu.fi

[1] Department of Philosophy, Contemporary History and Political Science, University of Turku, Assistentinkatu 7, 20014 Turun Yliopisto, 20500 Turku, Finland

[2] Swedish School of Social Science, University of Helsinki, Snellmaninkatu 12 (PL 16), 00014 Helsingin Yliopisto, 00170 Helsinki, Finland

Published online: 29 March 2024

found that the extreme rain that caused those particular floods in Germany and Belgium in July 2021 was a once-in-500-year event. When managing risk connected to natural events, such as floods, societies must deal with the near certainty of future events but a great uncertainty about the timing and the magnitude of these events.

Managing risk related to uncertain natural disasters and investing in long-term solutions to flooding, for example, inevitably involves political decision-making. Arguably, in representative democracies, the problem with political decision-making when dealing with distant future events is the myopia associated with democratic politics. Even though authoritarian leaders can be myopic as well, this is especially problematic for democracies, which are "supposed to be responsive to the interests and preferences of the people they serve" (Kyllönen et al. 2023, p. 2). Both citizens and the elected representatives in charge of making policy decisions are generally assumed to be short-sighted and biased towards immediate gains (Healy and Malhotra 2009; Thompson 2010), or at least are assumed to give much greater weight to their own wellbeing than to that of future generations (Graham et al. 2017).

The assumption that people are biased towards maximising short-term rewards in politics while shying away from policies aimed at bringing future benefits that might bring unfavourable conditions today is, in many ways, logical and intuitive. First, the future is uncertain by definition, and information about the future and its potential problems is often diffuse, abstract and hypothetical. Second, the focus of political decision-making generally lies on decisions that are in the near future since elections in a democracy occur with relatively short intervals (Jacobs 2016; MacKenzie 2013). In other words, decisions that do not 'pay off' within the time frame of an electoral period are less appealing to both decision-makers and voters. Therefore, electoral cycles and many current policy-making processes and structures can be expected to reinforce the bias of favouring the current generation over future ones (Thompson 2010).

Not all policy choices with long-term implications are analytically equal. For example, depending on the context alternative ways of addressing a long-term problem may have different consequences for the distribution of resources horizontally, between segments of society (e.g. Jacobs 2011, pp. 20–21; Jacobs 2016), even if the alternatives produced the same aggregate net benefits. Moreover, some long-term policy implications appear as choices on whether to invest in some uncertain—but potential—future benefit at the expense of today's consumption. In contrast, some long-term policies could be viewed through the lens of intergenerational solidarity. Therefore, they capture to what extent people are willing support protecting future generations' interests, even at the expense of protection of current ones. In this study, we are primarily concerned with the time perspective of politics in the sense of preferences concerning the benefits of future generations as opposite to current ones, leaving aside the problems of uncertainty and of horizontal distribution.

While assumptions related to voter myopia are a priori plausible, they have hardly been subjected to systematic testing (see also Rapeli et al. 2021). Likewise, the determinants of voters' short-sightedness and bias towards wellbeing of the present generation remain largely unexplored. Presumably, not all individuals

are short-sighted to the same extent. In this study, we explore two separate, but not mutually exclusive, assumptions regarding the sources of intergenerational solidarity: one based on geographic distance and the other based on overall orientation towards the timespan of politics. We do so by examining how spatial familiarity with a policy issue and generally future-oriented political thinking are associated with the acceptance of political decisions that imply intergenerational trade-offs. In this measure, we address the issue of flood prevention within a geographically limited region, the province of Satakunta, located in southwestern Finland.

First, we expected that spatial distance to the potential event would influence whether citizens would be willing to accept investment in the future generations' safety in exchange of flood mitigation policies which would bring results during this generation. Specifically, we assumed that living in a flood-risk area would be associated with a greater acceptance of such trade-offs. Second, we expected that people who hold future-oriented beliefs about how politics ought to be conducted in general would be more likely to accept mitigation of future floods at expense of mitigation of those taking place sooner, compared to those who hold less future-oriented beliefs. Lastly, we expected that the effects of being more prone to future-oriented political thinking and living in a flood-risk area would reinforce each other, making it more likely that citizens would accept present-generation losses in return for greater investment in the future generations' flood-risk management.

Our results provide partial support for these expectations. Specifically, living in a flood-risk area is associated with a greater likelihood of supporting a flood mitigation policy that brings few benefits in the short term but notable protection for future generations. That is, although the geographical scope of our data is limited, local differences in the likelihood of flooding are linked to differences in policy preferences. In contrast, we found no conclusive evidence that generally future-oriented political thinking leads to a greater acceptance of intergenerational trade-offs. Furthermore, we did not find support for the notion that the association between the place of residence and policy preferences is affected by more general political future orientation.

Theory and hypothesis

According to Jacobs (2011, 2016; see also Jacobs and Matthews 2012, 2017; MacKenzie 2013, 2018; Svallfors 2013), investing in the future faces several obstacles that result in the undervaluation of the tomorrow in comparison to today. The first obstacle is related to difficulties regarding anticipation of the future. Anticipation requires that people think about and predict what is to come (Nussbaum et al. 2006). However, there are individual differences in personal willingness to do so (see for example Baumeister et al. 2020; Tonn and Conrad 2007). In addition, even if one were willing to think about the future and tried to predict its potential course, such attempts would be bound to encounter difficulties. The future is uncertain by definition, and so is the information related to it. While information concerning the present day is specific and vivid, and the need to address current problems is urgent, information about the future and its potential problems

is diffuse, abstract and hypothetical. This induces citizens and politicians to pay less attention to information about the future when evaluating policy goals and courses of action, even if they care about the long term.

The uncertainty related to long-term policies can be caused, in part, by the diffuse and abstract nature of information regarding the future and the difficulties related to thinking of what is to come. Hence, an essential component in the difficulty of reflecting on the future is the 'distance' to future events. According to Liberman et al. (2007) the psychological distance to an event exists in four dimensions: spatial, social, temporal and hypothetical. *Spatial distance* refers to the physical or geographical distance to the event. Here, things happening in close proximity to the observer are, in general, viewed as more important, while increases in spatial distance decrease the impact that events have on individuals. *Social distance* involves interactions and relationships within and between different population groups. Where social 'nearness' exists between two groups, inter-group relations are presumed to be more common as well as more meaningful. *Temporal distance* means that imminent events are perceived as more concrete and specific, while those in the distant future or past may be seen as more abstract and understood as more vague. Lastly, *hypothetical distance* refers to the perceived likelihood of an event occurring. In general, more probable events have lower hypothetical distance, while less probable events are construed at a higher level and are thought of more abstractly.

Furthermore, research by Liberman and Trope (1998, 2003) suggests that psychological distance and the response people have to a specific event are related. If the distance to an event, a problem or an object is small, it can be perceived as being more tangible, and the responses to it more urgent. When the distance is great, these things are not considered to be 'present in the direct experience of reality' (Liberman et al. 2007). This could be likened to issue salience, a central concept in political science, which scholars use to illustrate that any given policy issue may be important to some citizens while ignored by others at the same time (Miller et al. 2016). According to Krosnick (1990), salience can be defined as 'the degree to which a person is passionately concerned about and personally invested in an attitude'. If we view issue salience in terms of distance, we maintain that more salient issues are perceived as being nearer, while less salient issues appear to be further away. In terms of geographical distance, based on Tobler's first law of geography (Tobler 1970), this seems intuitive. According to Tobler (1970, p. 236), even though all things can be related in principle, things that are closer to each other are more related than things that are distant from each other. People can usually be expected to pay more attention to spatially proximate things compared to things that are distant.

Kyselá et al. (2019) found that the type of environmental risk being addressed matters for how citizens respond to variations in distance. In the case of air pollution, spatial proximity is associated with more favourable attitudes to public spending, while the opposite is true for the more psychologically distant concept of climate change. Kyselá et al. also found that these patterns hold irrespective of the temporal distance to the events. This suggests that, when considering the psychological distance from the viewpoint of issue salience, the four dimensions

of psychological distance can be seen as operating simultaneously (see also Bar-Anan et al. 2006). A closer issue, whether spatially, socially, temporally or hypothetically closer, can be seen as salient and concrete. However, as individuals are removed from the direct experience of an event, information about the event becomes more sparsely available or less reliable, leading them to rely on schematic, prototypical information. This is why spatially, socially, temporally or hypothetically distant things generally appear to be less salient.

Here, we assume that a decreasing psychological distance of any dimension would also lead to closeness in other dimensions; i.e. spatial proximity to an issue would also lead to diminished temporal, social and hypothetical distance concerning the same event. By definition, "future generations include distant people" (Graham et al. 2017, p. 424). Spatial closeness to the issue could make the concerns, needs and perspectives of future generations appear closer in terms temporality and reduce the social distance between future generations and the current ones. Those living in areas labelled as at risk of flooding have been drawn further into the process through the promotion of precautionary measures such as the floodproofing of homes as well as other preparatory activities (Donaldson et al. 2013). In principle, the issues related to floods and political decisions regarding their prevention should appear to be nearer to those individuals, compared to those without the apparent risk of facing floods in their lives. Therefore, the issue should be more salient to them regardless of their own individual political future orientation. Higher issue salience would therefore increase intergenerational solidarity and therefore the likelihood of investing in the future generations' flood prevention at the expense of flood prevention right now.

Based on this assumption, we formulated the following hypothesis:

H1 Spatial closeness to a potential future event is associated with greater acceptance of intergenerational trade-offs.

However, it is likely that, in addition to the psychological proximity of the issue, there are other, although not necessarily mutually exclusive, determinants of individuals' level of intergenerational solidarity. It is plausible that some individuals are more future-oriented regardless of the issue posed to them, i.e. they choose future-regarding and future generations-benefitting policy alternatives over short-term ones both on highly salient and less salient issues. Such tendencies can be analysed using the concept of political future orientation (see Rapeli et al. 2021).

Even though temporality is always a factor in politics, i.e. it is just as important to know *when* citizens want something compared to *what* they want, there does not appear to be a definitive definition of political future orientation. That said, when trying to understand future-oriented attitudes, a logical starting point is the concept of future consciousness. Future consciousness is first and foremost a concept of the field of future studies, even though many other fields, such as psychology, sociology and anthropology, have built their own approaches

related to it (Ahvenharju et al. 2018). The origins of the concept in the future studies can be traced to the work of Johan Galtung (1982), who described future consciousness as being conscious of what is possible, probable and desirable in the future. From there, the concept has evolved and numerous definitions have been recorded. Recently, Sharpe et al. (2016) defined future consciousness as a 'shared capacity' and as 'awareness of the future potential of the present moment', limited by cognitive, psychological and systemic— political, social and economic—issues.

Based on the concept of future consciousness, future-oriented attitudes, regardless of whether they refer to political issues or not, involve an awareness of the future. In order to be aware of the future—to predict and anticipate its course—one must at least try to think about it (see for example Nussbaum et al. 2006). Considering the future consequences of actions has been observed to influence choices and shape individual behaviour (Strathman et al. 1994). From this, we can derive that a definition of political future orientation must include, first, the extent to which a person thinks about the future and whether it even matters to that person.

However, the definitions of future consciousness presented in the future studies do not directly fit the purposes of explaining attitudes regarding the 'when' of political decision-making. Due to their abstract and somewhat all-encompassing nature, these definitions might not be directly applicable to the political preferences of citizens, and they might not take into account the obstacles of long-term governance or trade-offs involved with investing in the future.

People might not trust those who govern enough to fulfil their promises about investing in the wellbeing of future generations (see Svallfors 2013). Moreover, even if today's politicians were trustworthy, the money they allocate to a cause might be spent elsewhere by the next government. This can induce some citizens to prefer short-term gains and rewards for the current generations that can be reaped soon (Jacobs 2011, 2016; Jacobs and Matthews 2012, 2017). Moreover, long-term investment usually involves some groups bearing a larger share of the costs than others. These groups can organise and mobilise opposition and lobby against proposals that are unfavourable to them in order to obstruct them, or at least delay their implementation (Jacobs 2011, 2016; Jacobs and Matthews 2012, 2017).

Thus, the capability to take future generations' perspective in political decision-making, that is, one's political future orientation, can be seen as having two dimensions. On one hand, it is related to a person's innate ability to think about issues from a long-term perspective, but on the other hand, it is also affected by one's impression of other people's (or the society's) ability to think and act in accordance with long-term decision-making.

We assume that differences in individual levels of political future orientation help understand variation in citizens' choices containing intergenerational trade-offs. By highly politically future-oriented people, we refer to individuals who think about the future considerably, find its course important and are willing to invest in the future despite short-term losses. We expect that such people are especially likely to support preparatory actions to prevent floods in the future, even though the same actions

would not result in increased protection against floods during their own generation. Based on these assumptions, we formulated the following hypothesis:

H2 Greater political future orientation is associated with greater acceptance of intergenerational trade-offs.

In addition, we expect that people who are strongly oriented towards the future are willing to support policies involving intergenerational trade-offs, even when the issue is spatially distant. This is because, in general, they are aware of the future and are predisposed to value future benefits. Conversely, individuals whose political future orientation is otherwise at a low level find future-oriented policies attractive if they perceive the issue as proximate. Political future orientation consequently conditions the effect that spatial closeness has on the support for alternative policies with different temporal distributions of benefits. We hypothesise that political future orientation moderates the effect of spatial closeness on the acceptance of intergenerational trade-offs. Specifically, we assume that the attractiveness of a long-term policy is more dependent on the spatial closeness of a potential future event for individuals with relatively low levels of political future orientation. Likewise, we assume that the policy preferences of individuals with high levels of political future orientation are not dependent on the spatial closeness of the potential event.

H3 Spatial closeness to a potential future event is associated with greater acceptance of intergenerational trade-offs, especially for individuals with lower political future orientation.

Data and methods

To measure the differences between individuals' levels of political future orientation and to evaluate whether these attitudes are related to individuals' decision-making, we utilised a survey conducted in the region of Satakunta, Finland, in the spring of 2020. The survey was sent to a random sample of individuals from the region between the ages of 15 and 80 ($n = 6000$). The survey included questions about respondents' opinions concerning the future of Satakunta and their preferred policies regarding the future. The survey also included items on more general political attitudes, in addition to socio-economic variables and questions concerning personal life situations. The primary purpose of the survey was to recruit participants to a regional deliberative citizen assembly that would later gather to discuss the future development of the region up until the year 2050 and approximately 17.5% ($n = 1049$) of the sample filled in and returned the survey. The geographical distribution of the respondents closely resembles that of the actual population in Satakunta. To account for the fact that the respondents are somewhat older and more educated than inhabitants in the Satakunta in general, we make use of post-stratification weights in the analysis.

Dependent variables

Based on previous literature regarding thinking about the future, we assume that the more future-oriented a person is, the easier it is for them to accept long-term policy measures that foremost benefit future generations, while low levels of future orientation lead to the deepening of democratic myopia. The policy problem presented to the respondents was formulated following Graham et al. (2017). Flood prevention was chosen as a policy area because it provides an excellent context for studying people's intergenerational solidarity for a number of reasons. First, it is relevant for the residents of the region because floods are a recurring and persistent problem in the Satakunta region. In the Regional Risk Assessment (Ministry of the Interior 2018), floods are mentioned as a special regional characteristic: floods occur annually, and their likelihood is increasing. Nonetheless, even within the region there are local differences in the risk of major flooding. Second, as flooding is a regional problem, there are no possibilities for global free-riding as, for example, in the case of climate policy. Third, we formulated the problem presented to the respondents in terms of alternative policies, not in terms of alternative ways of distributing the costs of those policies between generations or between the local, regional and national levels, thus ruling out considerations of externalising long-term costs to the taxpayers of the other regions of the country. The policy choice was presented to the respondents as follows:

> Imagine that the Regional Council of Satakunta is pondering over three alternatives, all developed to prevent severe damages caused by floods in the region. Floods can cause damage to health, safety, the environment, transportation, the energy supply, the economy and cultural heritage, if one doesn't prepare for them. The costs for the current tax payers of each alternative are the same. Which alternative would you choose?

(1) Alternative A prevents 20 destructive floods during this generation, and 10 destructive floods during the next generation.
(2) Alternative B prevents no destructive floods during this generation, but 30 destructive floods during the next generation.
(3) Alternative C prevents 10 destructive floods during this generation, and 20 destructive floods during the next generation.

We consider Alternative A the least future generations-regarding and Alternative B the most, Alternative C falling in between. All alternatives were formulated so that any choice implied favouring either the current generation or the next one, thus ruling out an 'equal shares' bias (see Graham et al. 2017). Figure 1 shows the distribution of responses to the policy choice item. Clearly, the most common choice was C, whereas only approximately one in five chose the least future generations-regarding alternative, A. The most future-oriented alternative, B, was chosen almost as often as Alternative A.

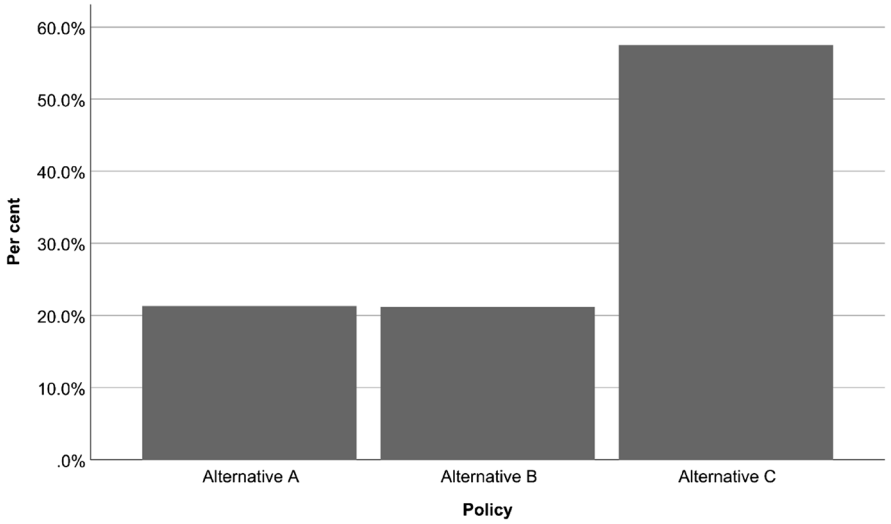

Fig. 1 The distribution of policy choices. A = 20 destructive floods prevented during this generation and 10 destructive floods during the next generation; B = no destructive floods prevented during this generation but 30 floods prevented during the next generation; C = 10 destructive floods prevented during this generation and 20 destructive floods during the next generation

Independent variables

To capture spatial proximity to a future event, we created the dummy variable *flood risk*. The variable indicates whether the Finnish Environment Institute (n.d.) identifies the home municipality of the respondent as a flood-risk area.[1] Although smaller floods are common in various parts of the region, our variable is intended to differentiate between those localities where the risk of a major flood is real and those where flooding is likely to cause more limited damage. The value of the variable is one if the municipality is identified as a flood-risk area and zero otherwise.

As a notable attempt to push forward the research on temporal aspects of politics, Rapeli et al. (2021) developed a measure of political future orientation. In their work, they discuss what kinds of traits in human thinking are beneficial to capture, and they analyse how demographic characteristics explain differences in measured levels of future orientation. The *political future orientation* measure we use is a sum variable composed of six items. The construction of the sum variable largely follows Rapeli et al. (2021). The variable is intended to capture, first, the extent to which a person thinks about the future generally and, second, the willingness to bear costs today in order to secure future benefits. The items included in the sum variable are reported in Table 1. The questionnaire also included three

[1] Flood-risk areas as they are defined here include the municipalities of Eura, Huittinen, Kokemäki, Merikarvia, Pomarkku, and Pori.

Table 1 Items included in the sum variable measuring political future orientation

Decision-makers must already now try to solve problems that lie decades away in the future. [Reversed scale]
Today's voters must be prepared to reduce their standard of living if it is necessary for the wellbeing of future generations. [Reversed scale]
The world changes so fast that it does not pay to make political decisions that reach far into the future
Voters' demands are binding for decision-makers even when they might threaten the wellbeing of those who come after us
Future living conditions must be carefully taken into account already in decisions made today. [Reversed scale]
Time will solve future problems, even without political decisions made today

items measuring procedural preferences; following Rapeli et al. we excluded these items as they showed less commonality with the other items in our data.

The items were measured on a Likert-type scale ranging from one to five (1 = completely agree, 2 = somewhat agree, 3 = somewhat disagree, 4 = completely disagree, 5 = don't know). We coded 'don't know' answers as missing and, when needed, reversed the scales so that larger values indicated a more future-oriented position.

We defined *political future orientation* as the mean of the responses to items listed in Table 1. Finally, we rescaled the index so that its theoretical minimum and maximum values became zero and one, respectively. Thus, its coefficient in the regression models indicates the difference between the most and the least future oriented. The distribution of the political future orientation variable is shown in Fig. 2. The construction of the index performed reasonably well in producing a distribution where most of the observations are located relatively close to the mean. Although one could expect a social desirability bias in the responses, so that the respondents would be tempted to appear highly future-oriented, the shape of the distribution suggests that this was not a major problem.

We considered the internal consistency of the sum variable sufficient for further analysis (Cronbach's alpha = 0.704). Moreover, based on a principal component analysis, each item loaded on a single dimension (eigenvalue = 2.453), factor loadings varying between 0.559 and 0.695 ($\chi^2 = 715.784$, df = 15, $p < 0.001$; Kaiser–Meyer–Olkin measure of sampling adequacy = 0.772).

We controlled for political trust, which can be understood as citizens' trust judgement concerning political institutions and procedures, and as citizens' evaluation of their confidence in them (Norris 2011; van der Meer 2017). If citizens do not trust political institutions, they are unlikely to trust politicians to fulfi their promises regarding future policies. In contrast, enhanced political trust among the public is expected to benefit long-term governance (see Jacobs and Matthews 2012; Rapeli et al. 2021). To measure political trust, we constructed a sum variable composed of four items, all of which were measured using an 11-point scale ranging from zero (do not trust at all) to ten (trust fully). The items measured trust in the national parliament, the national government, local

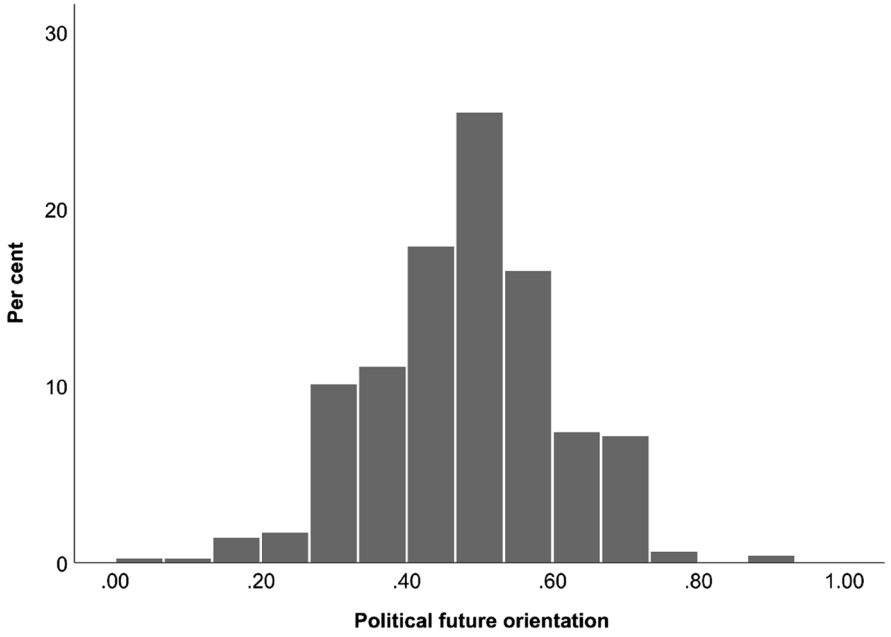

Fig. 2 Distribution of the political future orientation variable

politicians and the European Union. Given high internal consistency (Cronbach's alpha = 0.893), we consider it safe to use the sum variable in the analyses.

Having children and grandchildren can evoke sympathy and feelings of responsibility for future generations (Graham et al. 2017) and make people more likely to think about the legacy they leave behind. Therefore, in the analyses, we included the dummy variable *offspring* whose value is one if the respondent had children (and grandchildren, if applicable) and zero otherwise.

Furthermore, we included the basic socio-demographic variables age, education level and gender, which are often found in analyses of political attitudes and behaviour (see for example Smets and Van Ham 2013). The expected direction of the linkage between age and policy choice is somewhat unclear. Support for long-term policies can be greater among the young, who are presumed to have a longer remaining lifetime than the elderly and have been shown to think more about the future than more senior people (Gidley 1998; Hicks 1996). Lengthier life expectancy is also linked to risk-taking propensity (Bommier 2006), which could intuitively either increase or decrease intergenerational solidarity. Young people can be more willing to engage in risky behaviour and therefore less likely or able to support reduction of risks that only might manifest in the future. On the other hand specific to our case regarding intergenerational solidary, this could suggest that young people might be more likely to invest in the future generations' wellbeing despite the uncertainties that these policies carry.

Rapeli et al. (2021) found that young age is associated with greater willingness to invest in the future at the expense of today's consumption. However, there

is some evidence that the proximity of the end of one's life can make one think more about the future and about the legacy one is leaving for future generations (see Wade-Benzoni et al. 2010), resulting in more favourable attitudes towards protecting needs of future generations. We measured *age* in years and transformed it into a variable ranging from zero to one, where zero corresponds to the age of the youngest respondent in the data (15 years) and one to the highest age (81). Thus, the coefficient indicates the difference between the youngest and oldest respondents.

Education has a variety of functions, including the development of future consciousness (Ahvenharju et al. 2018), which leads us to presume that higher levels of education are associated with more future-oriented policy choices due to knowledge gains, advances in vocational expertise and improvements in critical thinking. The empirical evidence to support this is scarce, even though findings from a conjoint survey experiment by Christensen and Rapeli (2021, p. 64) show that 'people with high educational attainment […] are more willing to accept delayed benefits'. We measured *education* with a three-level categorical variable that indicates the highest degree attained (primary, secondary or tertiary).

The expected association between gender and attitudes towards the future is also unclear. While Rapeli et al. (2021) found that, in general, women are more future-oriented than men, when it comes to future consciousness, Tonn and Conrad (2007) previously found that the relationship between thinking about the future and gender is complicated, and the results of empirical testing are inconclusive. *Gender* was operationalised here as a dummy variable whose value is one if the person identified as a female and zero otherwise.

Descriptive statistics are reported in Table 2.

Methods

Our dependent variable is a categorical variable with three ordered values, which justifies the use of ordinal regression. Based on preliminary Brant tests, the proportional odds assumption, however, did not hold with respect to some of the independent variables. Specifically, those variables were age, offspring and education. Therefore, we estimated partial proportional odds models (see Williams 2006) using the package VGAM for R (Yee 2010). In the models, the proportional odds assumption was relaxed for the aforementioned variables. As for the dependent variable, we used Alternative A, the least future generations-regarding policy, as the base category, and the regression coefficients hence reflect the odds of choosing a more future generations-benefitting alternative. For the purposes of estimating the models, the dependent variable was re-ordered so that the values of the variable change with the degree of future orientation in a monotonic fashion; however, for the sake of clarity, the original value labels are used below when reporting the results. In addition to testing main effects, we tested the interaction between living in a flood-risk area and (individual) political future orientation. Our main independent variables were measured at different levels (municipality and individual) but because of the relatively small number of municipalities (17), we opted for cross-sectional rather than hierarchical analyses.

Table 2 Descriptive statistics

	N	Min	Max	Mean	SD
Continuous variables					
Political future orientation	936	0.00	0.93	0.48	0.18
Political trust	937	0.00	1.00	0.53	0.22
Age	947	0.00	1.00	0.52	0.28
Categorical variables		*N*			Valid %
Policy choice		922			
A		197			21.3
B		195			21.2
C		530			57.5
Flood risk		947			
Yes		589			62.2
No		358			37.8
Education		947			
Primary		275			29.0
Secondary		518			54.7
Tertiary		154			16.3
Gender		947			
Female		480			50.7
Not female		467			49.3
Offspring		945			
Yes		628			66.5
No		316			33.5

To adjust for sampling error and non-response, we calculated weights using raking that adjusted for gender, age, education and home municipality. The weights were intended to improve the representativeness of the sample in terms of the population structure of the Satakunta region. These weights were used in all the analyses. Because all background variables included in the weighting scheme, except for home municipality, were derived from the survey itself rather than registers, data on some of the variables were missing for some respondents. Those respondents were excluded from the analysis, leaving us with a sample of 953 respondents.

Results

Before proceeding to the main analyses, it is useful to take a preliminary look at the connection between the spatial proximity to a future event and policy preferences. To this end, we compared the distribution of policy choices in areas with and without a risk of a major flood. Figure 3 shows that, while the least future generations-regarding Alternative A was almost equally popular in both kinds of areas,

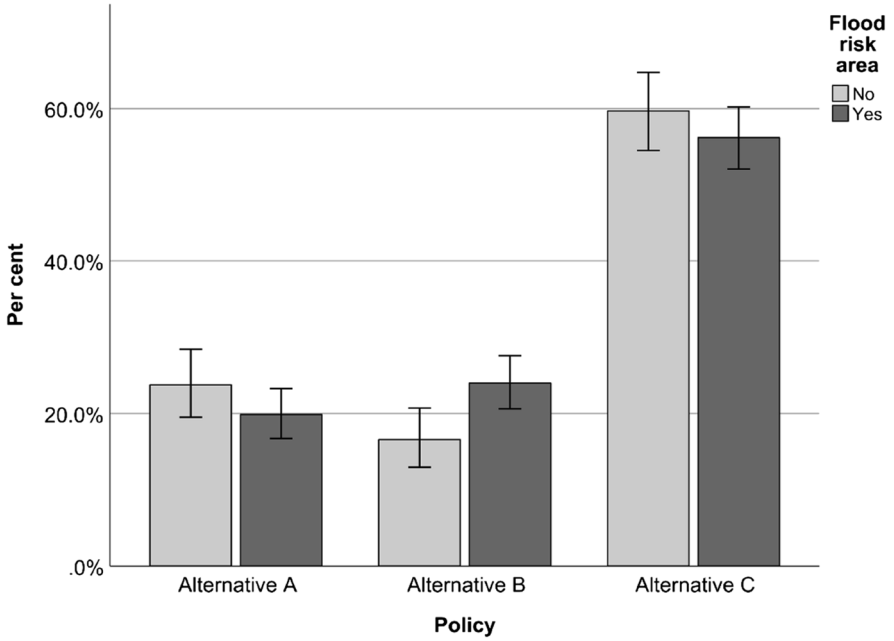

Fig. 3 The distribution of policy choices in areas with and without flood risk. The error bars show the boundaries of the 95% confidence interval

Alternative B was chosen more often in flood-risk areas than in the other areas. A Chi square test suggested that policy preferences and flood risk were systematically connected ($\chi^2 = 7.676$, df = 2, two-tailed $p = 0.022$). The preliminary evidence points to a conclusion that spatial proximity is to some extent associated with favouring policies that bring benefits over a longer time span.

We found no clear bivariate connection between policy choice and political future orientation. A one-way analysis of variance (ANOVA) pointed to no systematic variation in average political future orientation between policy choices ($F = 2.902$, df1 = 2, df2 = 916, $p = 0.124$). Results from partial proportional odds models are shown in Table 3 (with no interaction terms) and Table 4 (including an interaction between political future orientation and flood risk). In line with H1, we found that living in a flood-risk area is associated with a greater probability of choosing a more future generations-benefitting policy alternative. However, we found no evidence of an association between political future orientation, as measured using the sum variable specified in Table 1, and policy choices. Hence, the data do not support H2. The signs on the flood-risk variable and the interaction term would suggest that political future orientation indeed conditions the relationship between flood-risk and policy choices, but the interaction and its constitutive terms remain far from conventional levels of statistical significance. Therefore, we found no evidence of a moderating effect, contrary to H3.

The predicted probabilities of choosing each of the policy alternatives provide a more easily interpretable perspective on differences in policy preferences.

Table 3 Partial proportional odds model. Outcome variable: policy choice

	Beta	SE	Exp(Beta)	*p*
Intercept				
Y = B/C vs. Y = A	1.48	0.40		0.000
Y = B vs. Y = A/C	− 1.44	0.41		0.000
Flood risk	0.30	0.14	1.35	0.028
Political future orientation	− 0.90	0.57	0.41	0.113
Political trust	− 0.56	0.31	0.57	0.074
Age[a]				
Y = B/C vs. Y = A	0.11	0.37	1.11	0.771
Y = B vs. Y = A/C	1.09	0.39	2.96	0.005
Gender	− 0.16	0.13	0.86	0.244
Offspring[a]				
Y = B/C vs. Y = A	− 0.00	0.22	1.00	0.984
Y = B vs. Y = A/C	0.44	0.23	1.55	0.054
Secondary education[a]				
Y = B/C vs. Y = A	0.69	0.19	1.99	0.000
Y = B vs. Y = A/C	− 0.17	0.19	0.85	0.378
Tertiary education[a]				
Y = B/C vs. Y = A	0.33	0.25	1.39	0.183
Y = B vs. Y = A/C	− 0.69	0.30	0.50	0.023
N	953			
Log likelihood	− 859.49			
χ^2	80.56			0.000
Nagelkerke pseudo-R^2	0.096			

[a]Proportional odds assumption relaxed. Base category: Alternative A

Specifically, we calculated based on the model reported in Table 3 the predicted probabilities for average respondents, who only differ from each other in terms of whether or not they lived in a flood-risk area. The predicted probabilities are shown in Table 5. When calculating the probabilities, the values of the continuous variables were fixed to their means and those of the categorical variables to their modes (cf. Table 2). The probabilities shown in Table 5 tell a similar story to that of Fig. 3, albeit adjusting for socio-economic differences between areas. The average respondent was highly likely to choose the moderately future generations-regarding Alternative C irrespective of the area; more notable differences exist when it comes to the least future-oriented Alternative A and the most future-oriented Alternative B. For the average respondent living in a flood-risk area, the probability of choosing Alternative A was approximately five percentage points lower, and that of choosing Alternative B about five percentage points higher, compared to a similar respondent living elsewhere.

It cannot be ruled out that the failure to detect the hypothesised interaction between spatial proximity and political future orientation follows from limited statistical power. However, given our sample size, reasonable increases in the

Table 4 Partial proportional odds model

	Beta	SE	Exp(Beta)	*p*
Intercept				
Y = B/C vs. Y = A	1.39	0.53		0.008
Y = B vs. Y = A/C	− 1.53	0.54		0.004
Flood risk	0.43	0.57	1.54	0.448
Political future orientation	− 0.74	0.87	0.48	0.399
Flood risk × political future orientation	− 0.27	1.14	0.76	0.810
Political trust	− 0.56	0.31	0.57	0.073
Age[a]				
Y = B/C vs. Y = A	0.11	0.37	1.11	0.769
Y = B vs. Y = A/C	1.09	0.39	2.97	0.005
Gender	− 0.15	0.13	0.86	0.254
Offspring[a]				
Y = B/C vs. Y = A	− 0.00	0.22	1.00	0.994
Y = B vs. Y = A/C	0.44	0.23	1.55	0.054
Secondary education[a]				
Y = B/C vs. Y = A	0.69	0.19	2.00	0.000
Y = B vs. Y = A/C	− 0.16	0.19	0.85	0.394
Tertiary education[a]				
Y = B/C vs. Y = A	0.33	0.25	1.39	0.180
Y = B vs. Y = A/C	− 0.69	0.30	0.50	0.024
N	953			
Log likelihood	− 859.46			
χ^2	80.62			0.000
Nagelkerke pseudo-R^2	0.096			

Outcome variable: policy choice (base category: Alternative A)

[a]Proportional odds assumption relaxed. Base category: Alternative A

Table 5 The predicted probability with which an average respondent chooses each of the policy alternatives

Policy choice	Flood risk	Predicted probability (%)
A	No	21
	Yes	16
B	No	18
	Yes	23
C	No	61
	Yes	60

number of observations would yield modest power increases. Since methodologists in different fields have for a long time warned against relying on post hoc power analyses based on observed results (e.g. Heckman et al. 2022; Levine and

Ensom 2001; Yuan and Maxwell 2005), a common recommendation is to inspect confidence intervals instead. To form an impression of how 'close' statistically significant results might be, we calculated 95% confidence intervals for the odds ratios reported in Table 4, alongside predicted probabilities of choosing each of the policy alternatives at different levels of political future orientation in both kinds of areas (with and without flood risk). The respective graphs are provided in Supplementary Material and here we summarise the main findings. Notably, the lower and upper boundaries of the confidence interval for the interaction term were 0.08 and 7.1, respectively, pointing to the conclusion that a statistically significant effect would be unlikely even if the sample size was reasonably larger. Moreover, the predicted probabilities suggested that the association between choosing each of the alternatives and political future orientation is very similar (that is, weak) independently of flood risk, apart from a small level difference.

Regarding the control variables, the association between political trust and policy choices turned out to be somewhat unexpected: the probability of choosing a more future-oriented policy alternative decreases as trust increases. In contrast, higher age is clearly associated with a higher probability of choosing the most future generations-regarding Alternative B; there is also weak, statistically almost significant evidence for the notion that having children or grandchildren increases the probability of choosing this alternative. When combined, these two findings suggest that proximity to the end of one's life may lead people to think more about the legacy they are leaving to people coming after them, therefore making them more likely to select policy that especially benefit future generations. As for education, having a secondary-level of education rather than primary education increases the probability of choosing the 'middle' Alternative C, but having tertiary rather than primary education decreases the probability of choosing the most future generations-regarding Alternative B. Hence, the associations between education and the support for future-oriented policies do not appear straightforward.

Conclusion

Lately, the temporal perspective of politics has received increased attention (see for example MacKenzie 2021). Democracies are in general expected to be more future oriented and place more emphasis on protecting the interests of future generations than autocratic systems (Kyllönen et al. 2023). Still, ideas related to voter myopia or short-sightedness, individuals' future consciousness and the development of future orientation all point to the importance of the same problem: predicting the future perfectly is impossible, which makes adjusting to it and preparing for it both difficult and risky. Many contemporary decisions have consequences that play out over a long period of time. Many of these decisions also include intergenerational trade-offs, that is, in order to safeguard the wellbeing of future generations, some sacrifices may be needed today. Even though the assumptions behind political myopia were established some time ago (Healy and Malhotra 2009; Thompson 2010), political attitudes related to the time span of political decision-making can be seen as only a nascent research subject (see Christensen and Rapeli 2021; Rapeli et al. 2021).

This study is intended to contribute to the matter and advance understanding on how psychological distance and future-oriented political thinking influence the acceptance of political decisions with intergenerational trade-offs.

The policy issue presented to respondents was based on the example of Graham et al. (2017) and involved investing in flood protection, whose benefits could be reaped by different generations. Our analysis suggested that living in an area at risk of flooding increases the likelihood of choosing the most future generations-regarding policy choice. Therefore, issue salience seems to be a factor in long-term decision-making in that spatial closeness to the matter can evoke willingness to accept intergenerational trade-offs. Furthermore, it is apparent that spatial proximity to the issue does not inevitably translate into impatience or selfishness; i.e. that citizens would always prefer the problem to be addressed with short-term policies and immediate action which benefits they themselves can foremost enjoy. Rather, it can help citizens to see that future generations will likely face the same kind of problems and prepare them to choose policies accordingly. However, it should be emphasised that this finding is identified in the context of a Nordic democracy (see Grönlund and Setälä, 2012). This context could help explain why the respondents feel that they can afford the risk to wait for flood-risk management that benefit future generations, rather than themselves. In other words, the respondents live in political system where they trust that they will be taken care of if they suffer from a flood in the meantime.

More generally, for decision-makers, this suggests that framing regional, national or even global policies in local terms could lead to more future generations-regarding responses. On the other hand, if these policies are presented in abstract and psychologically distant ways, the likelihood of supporting these policies would drop. Here, our findings are in line with Kyselá et al. (2019), who found that when a psychologically closer policy issue, one related to air pollution prevention, was framed in a national way, it effected the willingness to address the problem positively. For the more psychologically distant problem of climate change, the pattern was the opposite.

In addition, we empirically tested whether an index of political future orientation consisting of survey items formulated by Rapeli et al. (2021) translates into willingness to choose policy alternatives that serve the interests of future generations. According to our empirical analysis, the political future orientation index in question had no statistically significant associations with policy choices related to flood prevention. That is, those with higher levels of political future orientation did not make markedly different policy choices than those with lower levels of political future orientation. Therefore, we conclude that, in this case, more general attitudes towards the future did not explain differences in intergenerational solidarity.

There are likely many possible explanations for this finding. One is related to the way the index of political future orientation is constructed. The individual survey items included in the index handled political decision-making from a very general viewpoint. Namely, they asked the respondent to determine whether they preferred politics in general to be carried out in the future-regarding ways. However, this finding should not be interpreted as revealing a flaw in the way

the index or individual survey items are constructed. It is possible that general political future orientation has behavioural and attitudinal implications that materialise in other contexts. Plausible examples include choices between more general and encompassing policy packages, such as those that political parties put forward in elections, or decisions to engage in political activism. Such implications remain outside the scope of this study, but they should be addressed in the future research.

Instead, our findings suggest that it is unlikely that future-oriented attitudes concerning policy making in general would translate into willingness to invest in policy programmes without exception, where benefits are not due until much later. In general, these results highlight the complicated relationship between attitudes concerning the timespan of politics and making future generations-regarding choices. Nonetheless, the limited size of our sample implies that small but consistent associations between general political future orientation and policy choices may have remained undetected. We therefore encourage scholars to address the issue using larger-scale surveys or other research designs.

As stated in the introductory section, the time perspective of politics is a complex problem field and, in our study, we focus on one class of problems. Nonetheless, these findings about attitudes towards flood-risk mitigation policies could perhaps also be applied to another even more complex natural disaster-adjacent issue, climate change. Our findings may help explain why citizens have difficulty engaging with the issue of climate change, even though most people should have some idea of what it entails by now. The issue of climate change is too distant and abstract. Moreover, it is an issue where responsibility is highly diffused, not only geographically, but also between different economic sectors and segments of society. This underscores the importance of framing climate change mitigation policies in terms that refer to events and places that are psychologically proximate to the recipient of the message.

Since it is assumed that the different dimensions of psychological distance are interconnected and reduction in one dimension could very well lead to reduction in others (Bar-Anan et al. 2006), construal-level theory offers a number of research avenues for future research concerning political attitudes. Future research should further investigate, for example, whether and to what extent other dimensions, such as hypothetical distance, influence individual attitudes and decision-making regarding the long term.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1057/s41269-024-00335-9.

Acknowledgements The authors would like to thank the participants at the general research seminar at the political science unit of University of Turku for their helpful comments and suggestions. This work has been funded by the Strategic Research Council at the Academy of Finland (Grant Number 312671) and the Academy of Finland (Grant Number 340660).

Funding Open Access funding provided by University of Turku (including Turku University Central Hospital).

Data availability The data used in the analysis have been submitted to and is currently in the process of being stored in the Finnish Social Science Data Archive (FSD). It will be available to all during the year 2023.

Declarations

Competing interests The authors report there are no competing interests to declare.

References

Ahvenharju, S., M. Minkkinen, and F. Lalot. 2018. The five dimensions of Futures Consciousness. *Futures* 104: 1–13.

Bar-Anan, Y., N. Liberman, and Y. Trope. 2006. The association between psychological distance and construal level: Evidence from an implicit association test. *Journal of Experimental Psychology: General* 135 (4): 609–622. https://doi.org/10.1037/0096-3445.135.4.609.

Baumeister, R.F., et al. 2020. Everyday thoughts in time: Experience sampling studies of mental time travel. *Personality & Social Psychology Bulletin* 46 (12): 1631–1648. https://doi.org/10.1177/0146167220908411.

Bommier, A. 2006. Uncertain lifetime and intertemporal choice: Risk aversion as a rationale for time discounting. *International Economic Review* 47 (4): 1223–1246.

Christensen, H.S., and L. Rapeli. 2021. Immediate rewards or delayed gratification? A conjoint survey experiment of the public's policy preferences. *Policy Sciences* 54: 63–94.

Donaldson, A., S. Lane, N. Ward, and S. Whatmore. 2013. Overflowing with issues: Following the political trajectories of flooding. *Environment and Planning c: Government and Policy* 31: 603–618.

Finnish Environment Institute. n.d. Tulvat Satakunnassa. Tulvariskien aluesivut. https://www.vesi.fi/tulvariskien-aluesivut-satakunta/. Accessed 21 Oct 2022.

Galtung, J. 1982. Future consciousness and the school. In *Schooling, education, and the future*, ed. J. Galtung, 79–91. Malmo: Department of Educational and Psychological Research, School of Education.

Gidley, J. 1998. Prospective youth visions through imaginative education. *Futures* 30 (5): 395–408.

Graham, H., et al. 2017. Do people favour policies that protect future generations? Evidence from a British Survey of adults. *Journal of Social Policy* 46 (3): 423–445.

Grönlund, K., and M. Setälä. 2012. In honest officials we trust: Institutional confidence in Europe. *The American Review of Public Administration* 42 (5): 523–542.

Healy, A., and N. Malhotra. 2009. Myopic voters and natural disaster policy. *American Political Science Review* 103 (3): 387–406.

Heckman, M.G., J.M. Davis III., and C.S. Crowson. 2022. Post hoc power calculations: An inappropriate method for interpreting the findings of a research study. *The Journal of Rheumatology* 49 (8): 867–870. https://doi.org/10.3899/jrheum.211115.

Hicks, D. 1996. A lesson for the future: Young people's hopes and fears for tomorrow. *Futures* 28 (1): 1–13.

Jacobs, A. 2011. *Governing for the long term: Democracy and the politics of investment*. Cambridge: Cambridge University Press.

Jacobs, A. 2016. Policy making for the long term in advanced democracies. *Annual Review of Political Science* 19: 433–454. https://doi.org/10.1146/annurev-polisci-110813-034103.

Jacobs, A., and J.S. Matthews. 2012. Why do citizens discount the future? Public opinion and the timing of policy consequences. *British Journal of Political Science* 42 (4): 903–935. https://doi.org/10.1017/S0007123412000117.

Jacobs, A., and J.S. Matthews. 2017. Policy attitudes in institutional context: Rules, uncertainty, and the mass politics of public investment. *American Journal of Political Science* 61 (1): 194–207.

Kreienkamp, F. et al. 2021. Rapid attribution of heavy rainfall events leading to the severe flooding in Western Europe during July 2021. Report by World Weather Attribution. https://www.worldweatherattribution.org/wp-content/uploads/Scientific-report-Western-Europe-floods-2021-attribution.pdf.

Krosnick, J.A. 1990. Government policy and citizen passion: A study of issue publics in contemporary America. *Political Behavior* 12: 59–92.

Kyllönen, S., M. MacKenzie, and M. Setälä. 2023. Introduction: The challenges and possibilities of future-regarding governance. In *Democracy and the future: Future regarding governance in democratic systems*, ed. M. MacKenzie, M. Setälä, and S. Kyllönen. Edinburgh: Edinburgh University Press.

Kyselá, E., E. Tvinnereim, and E. Ivarsflaten. 2019. Attitudes to public spending on environmental risk reduction: The role of temporal and spatial distance. *Environmental Sociology* 5 (4): 362–373.

Levine, M., and M.H.H. Ensom. 2001. Post hoc power analysis: An idea whose time has passed? *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy* 21 (4): 395–518. https://doi.org/10.1592/phco.21.5.405.34503.

Liberman, N., and Y. Trope. 1998. The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology* 75: 5–18. https://doi.org/10.1037/0022-3514.75.1.5.

Liberman, N., and Y. Trope. 2003. Temporal construal. *Psycholgical Review* 110: 403–421. https://doi.org/10.1037/0033-295X.110.3.403.

Liberman, N., Y. Trope, and E. Stephan. 2007. Psychological distance. In *Social psychology: Handbook of basic principles*, vol. 2, ed. A.W. Kruglanski and E.T. Higgins, 353–381. New York: The Guilford Press.

MacKenzie, M. 2013. Future publics: Long-term thinking and farsighted action in democratic systems. PhD Thesis, University of British Columbia.

MacKenzie, M. 2018. Deliberation and Long-Term Decisions. In *The Oxford Handbook of Deliberative Democracy*, ed. A. Bächtiger, J. Dryzek, J. Mansbridge, and M. Warren. Oxford: Oxford University Press.

MacKenzie, M. 2021. There is no such thing as a short-term issue. *Futures*. https://doi.org/10.1016/j.futures.2020.102652.

Miller, J.M., J.A. Krosnick, and L.R. Fabrigar. 2016. The origins of policy issue salience: Personal and national importance impact on behavioral, cognitive, and emotional issue engagement. In *Political psychology*, ed. J.A. Krosnick, I.-C.A. Chiang, and T.H. Stark. New York: Taylor & Francis.

Ministry of Interior. 2018. *Satakunnan alueellinen riskiarvio*. Helsinki: Ministry of Interior.

Norris, P. 2011. *Democratic deficit: Critical citizens revisited*. Cambridge: Cambridge University Press.

Nussbaum, S., N. Liberman, and Y. Trope. 2006. Predicting the near and distant future. *Journal of Experimental Psychology – General* 135 (2): 152–161.

Rapeli, L., M. Bäck, M. Jäske, and V. Koskimaa. 2021. When do you want it? Determinants of future-oriented political thinking. *Frontiers in Political Science*. 3: 692913. https://doi.org/10.3389/fpos.2021.692913.

Sharpe, B., et al. 2016. Three horizons: A pathways practice for transformation. *Ecology and Society*. https://doi.org/10.5751/ES-08388-210247.

Smets, K., and C. van Ham. 2013. The embarrassment of riches? A meta-analysis of individual level research on voter turnout. *Electoral Studies* 32 (2): 344–359. https://doi.org/10.1016/j.electstud.2012.12.006.

Strathman, A., F. Gleicher, D.S. Boninger, and C.S. Edwards. 1994. The consideration of future consequences: Weighing immediate and distant outcomes of behaviour. *Journal of Personality and Social Psychology* 66 (4): 742–752. https://doi.org/10.1037/0022-3514.66.4.742.

Svallfors, S. 2013. Government quality, egalitarianism, and attitudes to taxes and social spending: A European comparison. *European Political Science Review* 5 (3): 363–380. https://doi.org/10.1017/S175577391200015X.

Thompson, D.F. 2010. Representing future generations: Political presentism and democratic trusteeship. *Critical Review of International Social and Political Philosophy* 13 (1): 17–37. https://doi.org/10.1080/13698230903326232.

Tobler, W. 1970. A computer movie simulating urban growth in the Detroit region. *Economic Geography* 46 (2): 234–240.

Tonn, B.E., and T. Conrad. 2007. Thinking about the future: A psychological analysis. *Social Behavior and Personality* 35 (7): 889–902.

van der Meer, T.W.G. 2017. Political trust and the "Crisis of democracy." In *Oxford research encyclopedia*, ed. W.R. Thompson. Oxford: Oxford University Press. https://doi.org/10.1093/acrefore/9780190228637.013.7.

Wade-Benzoni, K.A., H. Sondak, and A.D. Galinsky. 2010. Leaving a legacy: Intergenerational allocations of benefits and burdens. *Business Ethics Quarterly* 20 (1): 7–34.

Williams, R. 2006. Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *The Stata Journal* 6 (1): 58–82.

Yee, T.W. 2010. The VGAM package for categorical data analysis. *Journal of Statistical Software* 32 (10): 1–34. https://doi.org/10.18637/jss.v032.i10.

Yuan, K.-H., and S. Maxwell. 2005. On the post hoc power in testing mean differences. *Journal of Educational and Behavioral Statistics* 30 (2): 109–229. https://doi.org/10.3102/10769986030002141.

Mikko Leino is a Postdoctoral Researcher at the Department of Philosophy, Contemporary History and Political Science at the University of Turku, Finland. His research interests include deliberative democracy, democratic innovations and political attitudes.

Juha Ylisalo is a Postdoctoral Researcher at the Department of Philosophy, Contemporary History and Political Science at the University of Turku, Finland. His research interests include party politics, political attitudes and the time perspective of politics.

Staffan Himmelroos is a University Lecturer at the Swedish School of Social Science at University of Helsinki. His primary research interests include deliberative democracy, democratic innovations and the political behaviour of external citizens. He is also a recipient of the Meisel-Laponce Award (2020) for the best article 2016–2019 in the International Political Science Review.