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We care, but delegate: Climate disasters and climate migration trigger concern, normative beliefs, and altruism — but not cooperation

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Abstract

Despite growing awareness of climate change, individual action remains limited. We conducted two pre-registered experiments (one online with a representative sample, one in the laboratory with incentivized tasks) to examine whether framing climate risks as natural disasters – i.e., an immediate, unpredictable threat – or climate migration – i.e., a distant, gradual threat – in one's own country fosters pro-environmental behavior, also identifying mechanisms behind the persistent intention–action gap. Exposure to nature risks increased personal normative beliefs, concern, and donations to environmental causes, but did not promote cooperation in settings prone to free-riding. Hormonal data revealed a defensive 'flight' response, suggesting risk avoidance in strategic contexts. Altruism emerged in non-competitive settings, but collective action remained limited by fear that others would not cooperate, prompting individuals to delegate responsibility to institutions. This tendency was especially pronounced among participants with high institutional trust, who, after exposure to climate risks, lowered their contributions and expectations in strategic settings, while increasing donations in non-strategic contexts.

Keywords: Climate change, Climate migration, Cooperation, Personal normative beliefs, Pro-environmental attitudes and behaviors, Risk perception, Physiological responses.

Declarations of interest: the authors have no competing interests to declare that are relevant to the content of this article.

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Introduction

Despite the growing urgency of addressing climate change, shifts toward more sustainable behavior remain limited[1]. Widespread awareness has yet to translate into concrete action, possibly because climate risks are perceived as distant or abstract, and because individuals encounter a range of psychological, social, and institutional barriers. These include fear-driven avoidance responses, pessimism about others' cooperation in collective efforts, cognitive biases in risk perception, and a tendency to delegate responsibility to institutions, especially when personal actions are seen as ineffective or vulnerable to free-riding.

To better understand and potentially overcome these barriers, our study investigates the effects of two different types of climate threats – one less distant, made of sudden-onset events, the other representing a more abstract, gradual risk – on pro-environmental beliefs and behaviors. In two pre-registered experiments, informational video podcasts activated the awareness of climate change by framing climate risks either as natural disasters – i.e., the immediate threat – or as climate-induced migration flows – i.e., the distant threat –, both affecting one's own country in the future. Natural disasters (portrayed by the 'nature risk' manipulation) and climate migration (portrayed by the 'migration risk' manipulation) represent distinct but interconnected pathways through which climate change manifests. Comparing these two framings allows us to explore how different types of climate threats can increase pro-environmental attitudes, beliefs, and cooperative behavior.

The two experiments – one online survey with a representative sample, one in the laboratory with university students – were run in Italy, a country increasingly vulnerable to migration and natural disasters[2]. We assess a variety of outcomes: pro-environmental attitudes, attitudes towards immigrants and redistribution, risk preferences, trust and behavioral choices, i.e., participants' cooperation in a common risk social dilemma game (CRSD game), their personal (normative and descriptive) beliefs about others' behavior, and their donations to pro-environmental organizations. To shed light on the environmental intention-action gap, we compare different behavioral choices across individual decision-making contexts, where strategic interaction is absent, and collective action settings, where outcomes depend on others' choices. In our studies, this gap arises when individuals, despite showing pro-environmental normative intentions and preferences, act to maximize immediate personal payoffs in response to free-riding risks in group settings.

Adding to the previous literature, we also explore potential physiological, psychological, and attitudinal barriers to the lack of pro-environmental actions when informational podcasts are ineffective. More specifically, we investigate how risk perception and physiological states –

[1] For example, global carbon emissions reached an all-time high of 36.8 billion tons in 2022, showing little sign of decreasing despite international agreements. A 2021 survey by the European Investment Bank found that while 75% of Europeans recognize climate change as a serious threat, only 40% have taken steps to reduce their personal carbon footprint, such as reducing air travel or changing energy consumption habits.

[2] Italy is a relevant context for studying these two types of risk due to its increasing exposure to both climate-related natural disasters and migration flows. In the past five years, the country has experienced a 57% rise in extreme weather events, including the record 48.8°C heatwave in Sicily (2021) and catastrophic flooding in Emilia-Romagna (2023). At the same time, migration has surged, with over 130,000 refugees arriving in 2023—a 300% increase since 2019.

measured through hormonal samples – are affected by our treatments. We also examine whether treatment effects vary, among other factors, by political orientation and institutional trust.

Consistent with Szekely et al. (2021), our results from both studies indicate that both climate and migration risks influence personal normative beliefs – specifically, individuals' views on how much others ought to contribute. However, we find that exposure to information on climate change risks leads to limited changes in personal behavior. While the nature-focused (but not the climate migration) treatment increase concern for environmental issues and personal normative beliefs, these shifts only partially translate into behavioral change, boosting donations (as in Dechezleprêtre et al., 2024) to pro-environmental organizations, but not contributions in cooperative settings, where free-riding is possible. These results suggest: (a) a higher likelihood to engage in pro-environmental behavior when climate risk is perceived as more immediate and tangible, compared a more distant, gradual, and potentially predictable threat; (b) a gap between environmental beliefs and the collective actions required for effective climate mitigation; (c) altruistic individual choices in non-strategic – but not in competitive – settings; (d) a tendency for delegation to institutions (e.g., pro-environmental organizations). Points (b), (c), and (d) are likely driven by the expectation that others will not do their part – even though they should.

As a potential mechanism, the lab study revealed that participants exposed to nature-related risks exhibit a decrease in their testosterone-cortisol (T/C) ratio. This physiological change indicates a shift toward fearful and avoidant behavior, a defensive response (e.g., Nierman et al., 2017; Nofsinger et al., 2018; Romanova et al., 2022) that appears particularly relevant in social contexts where others' behavior can pose a threat to one's own payoff (Terburg and van Honk, 2013). This pattern supports the idea that the perceived threat of natural disasters triggers an instinctive self-preservation response, selectively dampening social risk-taking while preserving prosociality in low-risk environments.

As an additional channel beyond the belief–collective action gap highlighted by our results, we examine whether individual behavior is shaped by cognitive biases in risk perception (Berkebile-Weinberg et al., 2024), using money-incentivized tasks. Our findings reveal that individuals exposed to nature-related risks exhibit greater insensitivity to intermediate probabilities, overweight low probabilities, and underweight high probabilities of loss, thereby showing probability distortion. However, the gap between normative beliefs and individual contribution is mainly driven by the social risk of free-riding rather than risk perception, as we find no evidence of correlation between probability distortion and contribution in the CRSD game.

We also find that the tendency to delegate is more pronounced among individuals with high institutional trust. These individuals tend to donate more—especially in response to climate-related migration—, yet their empirical expectations, and to some extent their contributions, decline over time in group settings, reflecting heightened sensitivity to free-riding dynamics. Similar patterns of pessimism about others' willingness to act have also been documented in previous studies (Andre et al., 2024a, 2024b; Welsch, 2022).

Background and hypotheses

A growing body of research explores the effects of different information treatments on environmental attitudes (see Rode et al., 2021, for a meta-analysis) and pro-environmental behaviors (see Grilli and Curtis, 2021, for a review). Messages on climate change generally have limited effectiveness in changing environmental attitudes, policy views appear to be particularly harder to shift. Moreover, messages invoking emotions, decreasing psychological distance and involving religion are the most effective (Rode et al., 2021). Ranney and Clark (2016) provide experimental evidence that informing the public on how climate change works increases acceptance of the phenomenon, as well as providing statistical facts about climate change. Prospective information on local climate change is more effective than retrospective information in promoting pro-environmental actions, the impact is stronger for people who trust the central government (Binelli and Loveless, 2024). Moreover, Raimi et al. (2024) suggest that effective communication about climate migration can shift public perceptions. Grilli and Curtis (2021) highlight that pure information treatments, as well as telling people what to do, have little impact on sustainable behavior, whereas tailored information, public pledges and comparative feedback result to be effective. Dechezleprêtre et al. (2024) find that information on the impact of climate change increases willingness to take actions against it (donation to deforestation cause) but it does not alter environmental policy views. Bernard et al. (2023) shows that information on ways to reduce emissions has an impact on willingness to pay to offset emissions, suggesting that focusing on peer behavior is the most effective way to present this information. Similarly, Chen (2016) reports that fear appeal messages have a positive effect on the intention to engage in pro-environmental behaviors. However, strong fear appeals provoke a defensive response which makes perceived collective efficacy an important factor to observe an increase in intentions. Our study contributes to this literature by: (i) comparing the effects of two distinct types of information about the consequences of climate change (‘nature risk’ and ‘migration risk’), (ii) assessing their impact on sustainable behavior within a cooperative setting (CRSD game), and (iii) examining the role of risk perception and emotional states—measured through hormonal samples—in shaping environmental attitudes and behaviors.

Another strand of literature highlights the complexities of the gap between climate change attitudes and behavior. For instance, Berkebile-Weinberg et al. (2024) reveal that political polarization affects climate beliefs, with conservatives sometimes engaging in climate-friendly behaviors that contradict their skepticism. Lorenzoni et al. (2007) suggest that among the barriers which generate the intention-action gap in climate change action there is the perception that one’s own action has no impact if other people and/or institutions are not cooperating. Andre et al. (2024a) emphasize that, despite widespread support for climate action, individuals often underestimate others' willingness to act, leading to “pluralistic ignorance”. Similarly, Gupta et al. (2009) show that expectations on other cooperation are an important factor in green purchase decision. Following this line, Andre et al. (2024b) demonstrate that correcting misperceptions about social norms can increase pro-climate donations, especially among skeptics. This interplay between social norms and conditional cooperation underscores the potential for leveraging social norms to enhance climate action, as shown by Szekely et al. (2021). Additionally, Mason et al. (2024) highlight the importance of framing climate initiatives as vital for core societal values to engage diverse audiences.

Understanding these dynamics is crucial for developing strategies to effectively influence pro-environmental behaviors.

Our study builds on this existing literature by examining behavioral shifts from two complementary perspectives: individual preference settings, where strategic interaction is absent, and collective action contexts, where personal payoffs depend on strategic interactions with others. This dual approach allows us to analyze whether individuals adjust one type of behavior, both, or neither. Importantly, it helps us determine whether the reluctance to adopt sustainable behaviors in collective settings arises from concerns about free-riding, which do not influence decisions in isolated, non-strategic contexts. Some individuals hold strong pro-environmental preferences which might induce them to adopt sustainable behaviors sacrificing their personal interest. However, in cooperative settings the expectation that others are not going to cooperate reduce individual effort to collective environmental action (Bohr 2014; Doyle, 2023; Gupta et al., 2009).
By uncovering these inconsistencies, we provide insights into the environmental intentions-action gap. In the context of our study, this gap manifests when individuals, despite holding strong pro-environmental intentions, fail to act on them in group settings due to the appeal of maximizing immediate personal payoffs in the presence of free-riding risks. Additionally, we suggest that trust in institutions is an important factor influencing the emergence of the intention-action gap.

The hypotheses for both studies were preregistered to ensure research transparency and rigor. The preregistration for Study 1 is accessible on the Open Science Framework (OSF) at https://osf.io/yzdmr, and the preregistration for Study 2 is available at https://osf.io/emfh7. This section specifies the pre-registered hypotheses for the two studies conducted separately. A selection of results, identified as "R", is included in the main paper, while all other outcomes from pre-registered analyses are reported in detail either in the Online Appendix (OA) Section 1 and 2.

For Study 1, *H1a* posits that the podcast manipulations, designed to emphasize immediate and unpredictable risks from natural disasters ('nature risk'), or distant and gradual threats induced by climate migration ('migration risk'), or both ('nature and migration risk'), will increase the following dependent variables: subjective probability of the shock (OA), cooperation (R), charitable giving to climate-related accounts (R), environmental concern (R), attitudes (OA), attitudes toward immigrants (OA), attitudes toward redistribution (OA), and risk perception (OA).
H2a hypothesizes that moderator variables —such as social trust OA), level of prejudice toward migrants (OA), and past voting behavior (R/OA)—will interact with the main effects. Specifically, anti-immigration participants will exhibit heightened sensitivity to the climate migration manipulation.
A corollary hypothesis ensures that manipulation checks validate our stimuli, demonstrating that respondents correctly identify the podcast topics. Validation results are detailed in the fourth section of the Online Appendix.

In addition to these pre-registered hypotheses, and for consistency with Study 2, we also examine the moderating role of social media exposure (OA). Furthermore, in Study 1, we explore the role of institutional trust, both as an outcome (R) and as a moderator (OA). This analysis offers deeper insights into the discrepancies between behaviors observed in the

CDG and CRSD contexts. It also highlights preferences for delegation, where individuals, when confronted with the threat of natural disasters, may choose to rely on trusted institutions to address climate challenges rather than adopting personal behavioral shifts. This tendency may become particularly pronounced in collective action contexts, such as those replicated in our CRSD game, where the risk of free-riding by others diminishes the perceived efficacy of individual actions. Based on the observed results, we later pre-registered (pre-experimental measures of) institutional trust as a moderator in Study 2 to better capture its moderating role.

For Study 2, *H1b* proposes that the 'nature risk' and 'migration risk' conditions will increase self-reported pro-environmental attitudes, concern, and beliefs (OA) as well as behavioral outcomes, including donations in the Charity Dictator Game (CDG) and contributions in the Common Risk Social Dilemma Game (CRDS game) (R).
H2b suggests that participants in the 'nature risk' and 'migration risk' conditions, compared to the control condition, will exhibit increased physiological activation, as measured by pre-to-post podcast changes in testosterone and cortisol levels (R).
H3 predicts that the effects outlined in H1b and H2b will be moderated by pre-experiment survey variables, which are unaffected by the manipulations. These variables include institutional trust (R/OA), environmental attitudes and knowledge (OA), political preferences (OA), risk and time preferences (OA), prejudice toward immigrants (OA), and social media use (OA).
H4 addresses the impact of the 'nature risk' and/or 'migration risk' conditions, compared to the control condition, on participants' risk preferences, particularly through changes in probability weighting. More specifically, *H4a* posits that the probability weighting function shifts upward (elevation effect), leading to greater overweighting of low-probability events and reduced underweighting of high-probability events (R). *H4b* anticipates that the slope of the probability weighting function changes (slope effect), suggesting heightened insensitivity to intermediate probabilities, as well as increased overweighting of low-probability events and underweighting of high-probability events (R). The overall effect of these manipulations on probability weighting will depend on the relative strength of these elevation and slope effects, both of which predict a greater overweighting of low-probability events compared to the control condition.
Finally, *H5* replicates the finding from Milinski's CRSD game that contributions will be higher in high-risk scenarios than in low-risk scenarios across all conditions. It further predicts that the 'nature risk' and/or 'migration risk' conditions will increase contributions in both high- and low-risk scenarios, with these effects mediated by changes in probability weighting[3] (R).

This framework of hypotheses provides a comprehensive basis for analyzing the psychological, behavioral, and physiological mechanisms triggered by the podcast manipulations. Across both studies, it aims to uncover how different framings of climate-related risks—whether emphasizing natural disasters or migration—shape individual

[3] More specifically, we hypothesized that: H5a) because of increased (decreased) overweighting (underweighting), the elevation effect implies, in all risk scenarios of the CRSD game, larger contributions in 'nature risk' and/or 'migration risk' conditions compared to the control condition; H5b) because of increased overweighting and underweighting, the slope effect implies larger (smaller) contributions in the low-risk (high-risk) scenario of the CRSD game in 'nature risk' and/or 'migration risk' conditions compared to the control condition. The overall probability-weighting effect on contributions in the CRSD game will be determined by which of the two mechanisms (elevation vs slope) prevail.

perceptions, cooperative dynamics, personal normative beliefs and contributions. By integrating findings from the broader, diverse sample in Study 1 with the controlled, in-depth exploration in Study 2, this experimental framework contributes to a richer understanding of the factors influencing individual and collective responses to environmental challenges.

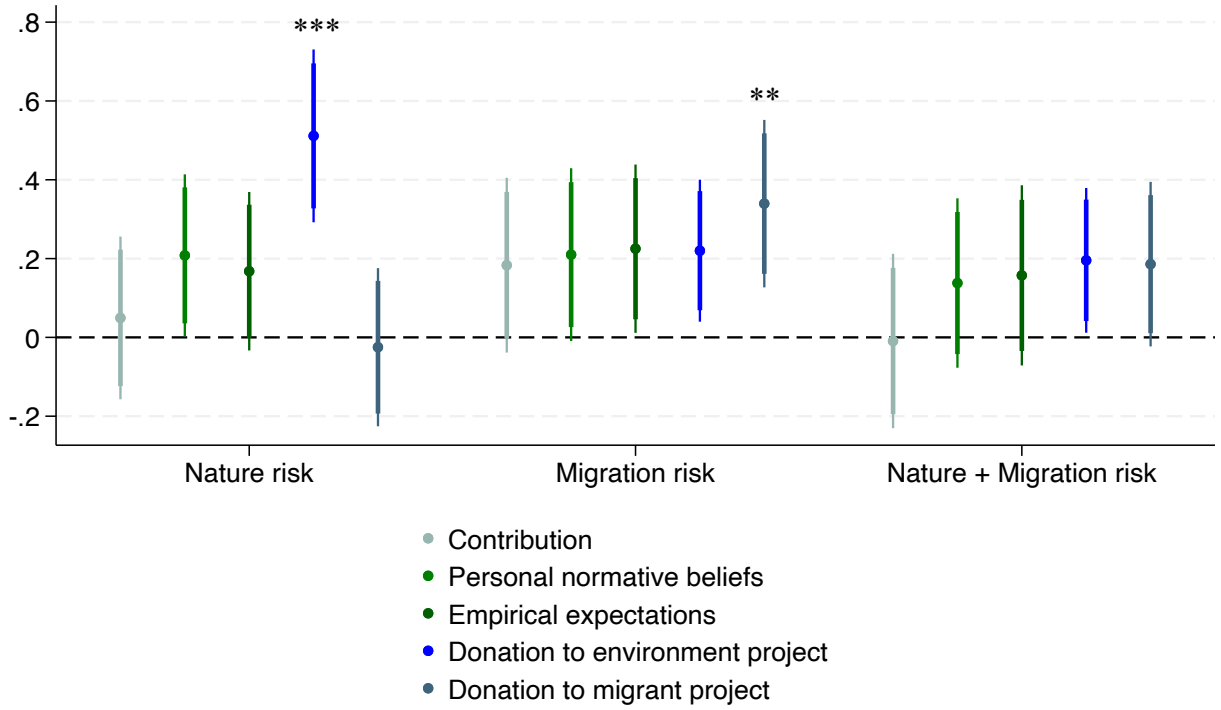
Results

Study 1

The first experiment (https://osf.io/yzdmr) was conducted as an online survey with a representative sample of the Italian population, recruited by the polling company Demetra. This study did not include incentivized measures. The experiment assessed the impact of two informational podcasts on climate change, as well as a third video combining both types of information, using a neutral podcast as a benchmark. Regarding the outcomes, we measured pro-environmental behaviors through two experimental tasks. First, participants engaged in a one-shot version of the Collective Risk Social Dilemma (CRSD) game (Milinski et al., 2008), where the shock probability was set at 50%, though described in ambiguous terms as to replicate the real-world general lack of precise information on the probability distribution of extreme events. We recorded participants' contribution decisions, their personal normative beliefs (how much they believed people should contribute), and their empirical expectations (how much they believed others would contribute). Additionally, participants were asked to estimate the likelihood of the shock, providing an exact perceived probability only if it fell within the 40%-59% range. Second, at the end of the game, participants decided how to allocate common pool resources between projects. Following exposure to the treatments and the game, the survey also measured respondents' environmental concerns, attitudes toward risk and ambiguity, and trust in institutions.

Results for the key outcomes indicate that the three treatments do not have a significant impact on contributions in the CRSD game, as shown in Figure 1. However, the 'nature risk' podcast increases personal normative beliefs of contributions by 0.21 standard deviations, and it also raises the likelihood of donating more resources to the environmental project by approximately 0.51 standard deviations. As expected, the 'migration risk' podcast increases personal normative beliefs and empirical expectations by 0.21/0.22 standard deviations, donations toward the migration project (by 0.40sd), with a marginal effect on donations to the environmental project too (0.22sd). When combining both treatments ('nature risk' + 'migration risk'), only the effects on donations replicates but with substantially lower magnitudes (0.2sd for the environmental project and 0.19sd for the migration project). This attenuation is likely due to the increased length and information density of the combined podcast, which may have reduced the effectiveness of the individual messages. Our hypothesis H1a is, therefore, only partially confirmed by the data with respect to only some variables (personal norms, empirical expectations, donation) and some treatments (complete treatment has low efficacy). Table A1b (OA - Section 1) shows that the only results robust to Romano-Wolf multiple hypothesis testing correction are the positive effect of the ‘nature risk’ treatment on donations to the environmental project, and the ‘migration risk’ treatment increase of donations to the migration project.

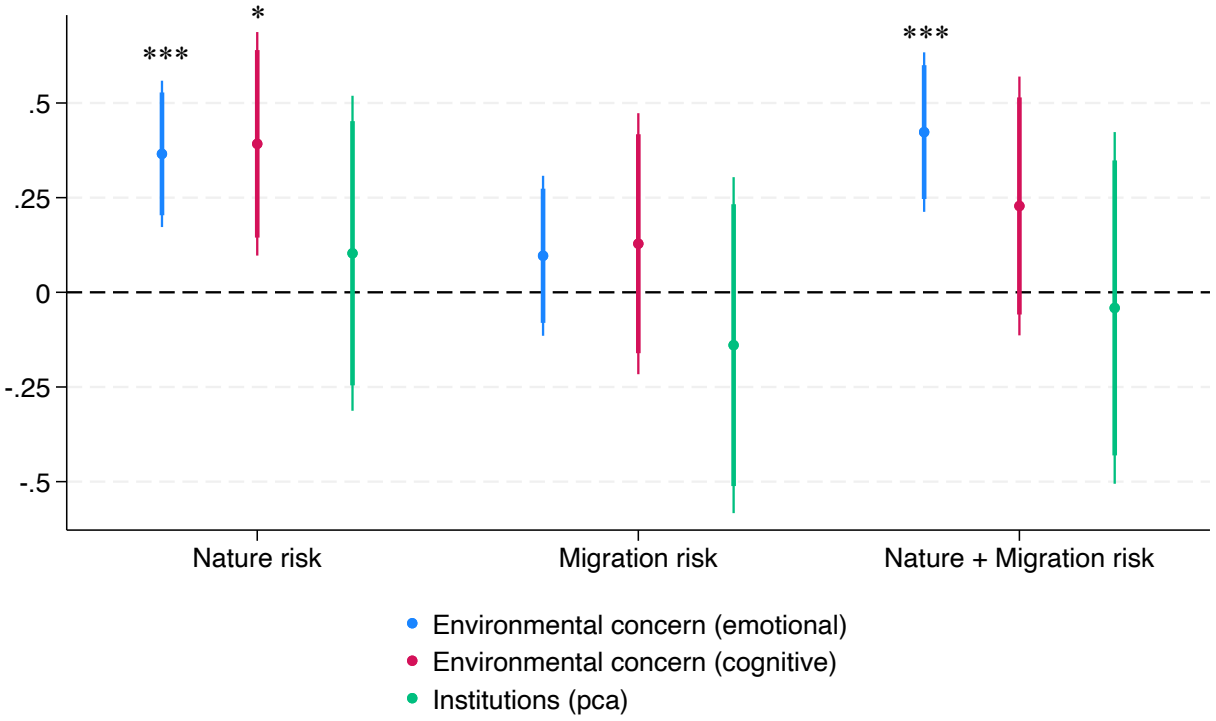
Figure 1. Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game.



Notes: Figure shows coefficients from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1 identify the Romano-Wolf p-values.

Figure 2 shows the impact of the three treatments on environmental concern and institutional trust. Environmental concern is measured using two distinct approaches: a variable capturing its emotional dimension and a scale designed to assess its cognitive component. Institutional trust is derived through principal component analysis (pca), aggregating trust in various national and international institutional actors. Our findings show that Hypothesis H1a is still partially confirmed: only the 'nature risk' information significantly increases both emotional and cognitive environmental concern by 0.37 and 0.39 standard deviations, respectively. The effect on emotional concern remains effective when combined with the 'migration risk' treatment (0.42sd). Moreover, all these results are robust to Romano-Wolf p-value correction (Table A2b in OA - Section 1). Increased concern in response to the 'nature risk' treatment also mirrors the increase in climate change knowledge by participants exposed to this podcast (Fig. A2 in OA - Section 1). The complete (nature + migration risk) treatment has a positive impact on support for environmental public spending (Fig. A2 in OA - Section 1). H1a is not confirmed on perceived probability of shock in the CRSD game, risk and ambiguity aversion, climate change responsibility, immigration and redistribution attitudes as the three treatments do not have an impact (Fig. A1-2 in OA - Section 1).

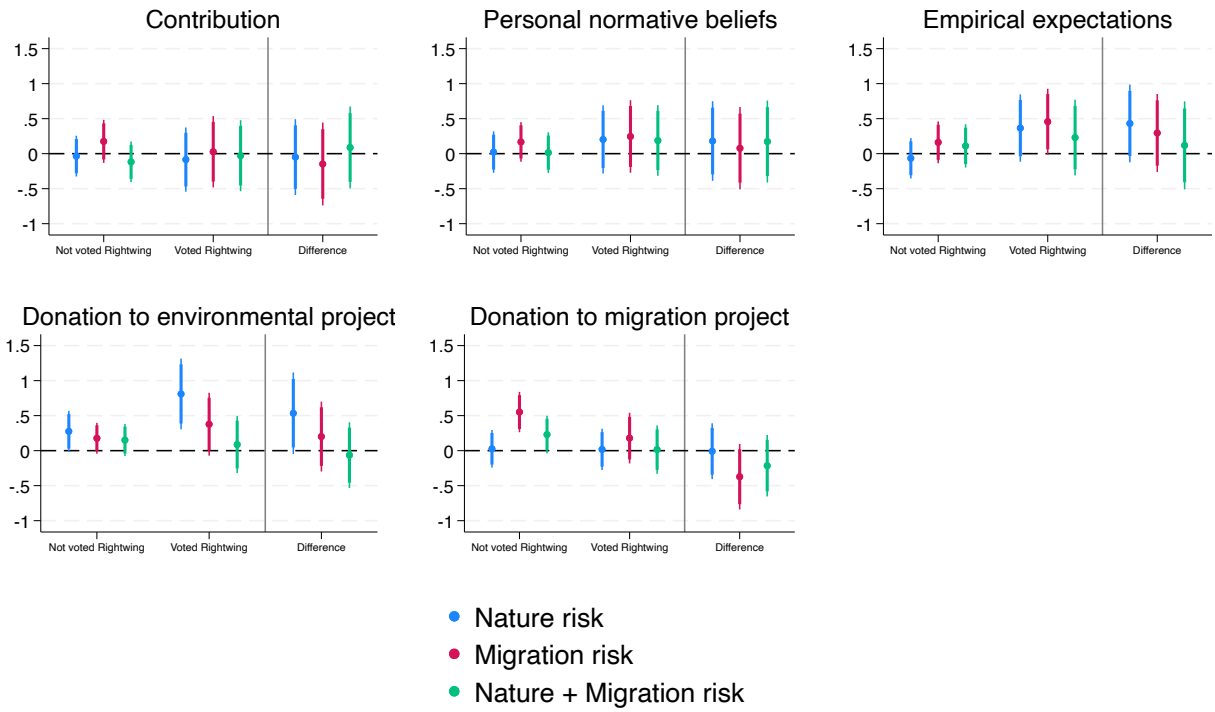
Figure 2. Impact of the treatments on environmental concern and institutional trust.



Notes: Figure shows coefficients from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1 identify the Romano-Wolf p-values.

The impact of these treatments varies across participants, as predicted by H2a. In particular, we observe distinct reactions among participants positioned at the right of the political spectrum. As shown in Figure 3, respondents who voted a right-wing political party, in the last national elections, increase donations to the environmental projects after the 'nature risk' treatment more than leftwing respondents (difference significant at 10% level – not robust to Romano Wolf correction), whereas we do not observe this difference for the other two treatments. Moreover, while leftwing and moderate respondents increase donations to the migration project as a consequence of 'migration risk' treatment, rightwing participants do not respond to it (although the difference between the two groups is not significant).

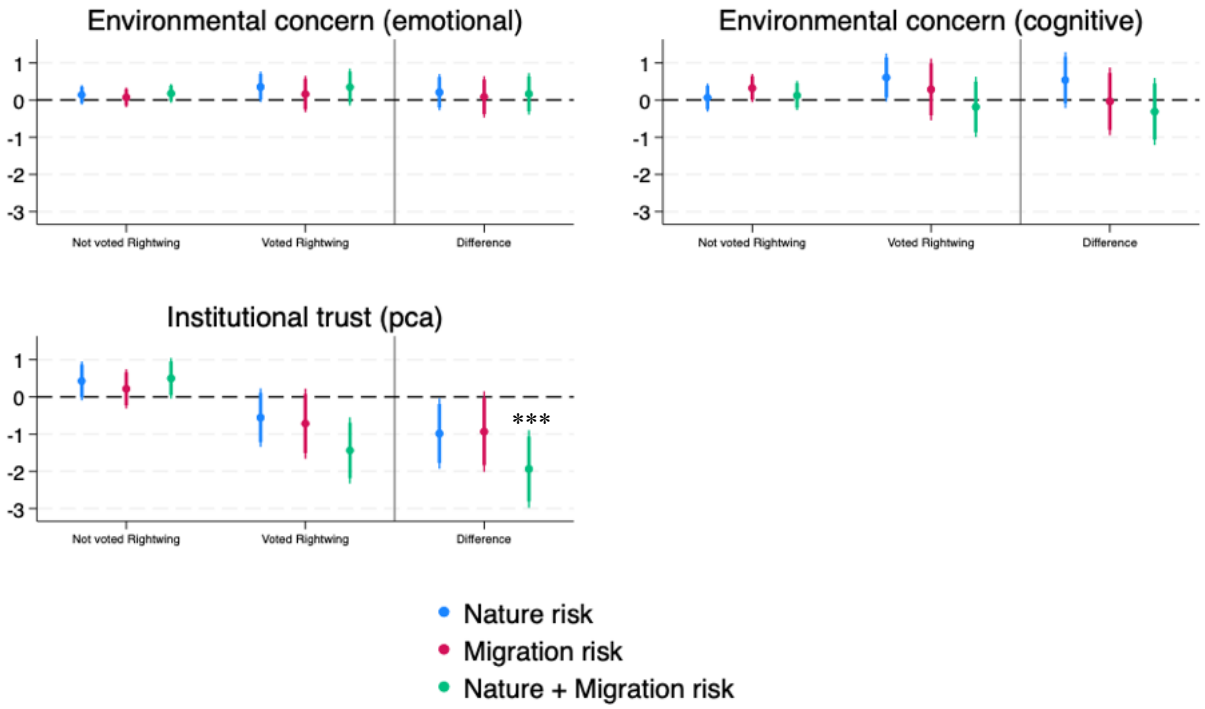
Figure 3. Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game for rightwing individuals.



Notes: Figure shows the marginal impact of the treatment from regressions controlling for age, gender, education and duration of the survey. Outcomes variables are standardized. Robust standard errors. Rightwing respondents are those who reported to have voted a rightwing party in the last national elections. Differences are not significant considering Romano-Wolf p-values.

H2a relative to past voting behavior remains confirmed when examining trust outcomes. Figure 4 highlights that right-wing voters exhibit a decline in institutional trust after viewing the 'nature + migration risk' podcast (the difference between the two groups of voters is significant at the 1% for the complete treatment and robust to Romano Wolf as Table A4b shows). These results hold considering self-reported political orientation instead of past voting behavior (Figures A3-4 in OA - Section 1).

Figure 4. Impact of the treatments on environmental concern and institutional trust for rightwing individuals.



Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. Rightwing respondents are those who reported to have voted a rightwing party in the last national elections. Romano-Wolf p-values are included only on differences and are identified by *** p<0.01, ** p<0.05, * p<0.1.

To summarize the key findings, emphasizing nature-related risks is more effective in fostering personal normative beliefs about cooperation, raising environmental donations and environmental concerns but does not translate into increased cooperative behavior. Trivially, the 'migration risk' treatment is the most effective to boost donations to the migration project. Information on combined climate change induced migration and natural disasters is rather ineffective[4].

Study 2

The second experiment (https://osf.io/emfh7) was conducted with students from the University of Turin and comprised two stages: an online survey and laboratory sessions.

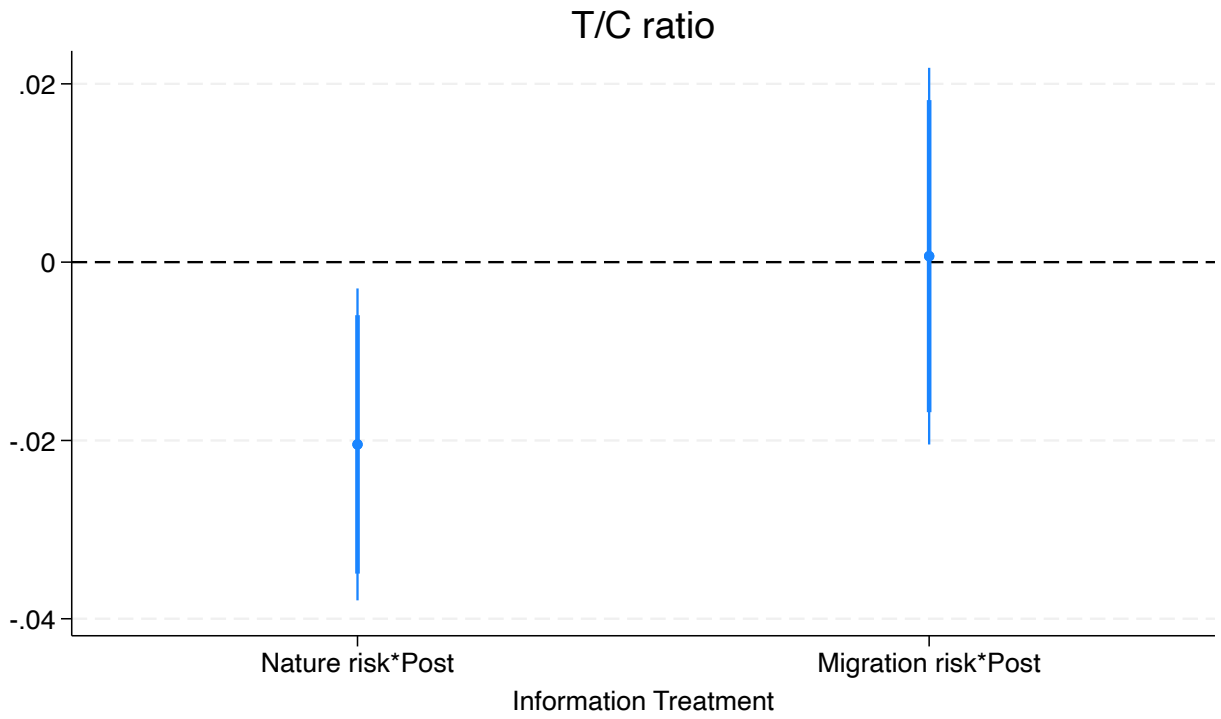
[4] There is evidence of heterogeneous treatment effects based on political orientation. Right-leaning respondents displayed reduced institutional trust when faced with environmental risks. Notably, this group showed heightened environmental donations and non-responsiveness in terms of donations to the migration project. Additional analyses in Section 1 and 2 of the Online Appendix show the other pre-registered heterogeneous treatment effects. Notably, donations to the environmental project induced by the 'nature risk' treatment are primarily driven by non-intensive social media users (SMU) (Figure A5 in OA – Section 1). Conversely, intensive SMU exhibit a backlash effect: when exposed to the 'migration risk' podcast, they show reduced levels of environmental concern and worse climate change attitudes (i.e., environmental concern, both emotional and cognitive; knowledge of climate change anthropogenic causes; feeling responsible of climate change and support for environmental spending), as shown in Figure A6-7 in OA – Section 1.

Approximately two weeks before the experimental session, participants completed a pre-experimental survey that collected socio-demographic information, time preferences, and attitudes toward the environment, immigration, and risk. This information was matched with data collected during the laboratory sessions, which took place at the CLOSER lab (University of Turin) in February and March 2024.
The experiment employed a 3x2 between-subject design, varying the type of video podcast viewed ('nature risk', 'migration risk' or control condition) and the probability of a shock in the CRSD game (high: 90% vs. low: 10%). The joint 'nature and migration risk' treatment was excluded to i) reflect its limited impact in Study 1 and ii) enhance statistical power. During the lab sessions, participants watched one of the climate change information video podcasts or an active control video. They then participated in a money-incentivized Charity Dictator Game (CDG), deciding how much of their endowment to donate to Greenpeace. Participants also played ten rounds of the CRSD game in groups of four, with anonymous rematching. Unlike the first experiment, risk probabilities in this study were explicitly defined as either 10% or 90% and remained consistent throughout the game, and the CRSD game was incentivized. Also in this CRSD game, we elicit participants' contributions, personal normative beliefs and empirical expectations. Additionally, participants completed tasks measuring time preferences, risk attitudes (using incentivized lottery choices in the loss domain), and attitudes toward environmental and migration issues. Importantly, saliva samples were collected both before and after the podcast manipulation to assess hormonal (cortisol and testosterone) responses to information on climate change risk.

The first outcome of interest we analyze is hormonal variation. We examine the testosterone-to-cortisol (T/C) ratio, a measure associated with risk-taking behavior and social aggression (Mehta and Joseph, 2010; Mehta et al., 2015; Nofsinger et al., 2018; Nierman et al., 2017; Terburg et al., 2009), both before and after the manipulation for each participant. To account for time-invariant individual characteristics—such as gender, age, and the time of day when the sample was collected—that could influence hormonal levels, we employ a fixed-effects regression model.

Results shown in Figure 5 reveal that the 'nature risk' treatment is the only one to significantly reduce the testosterone/cortisol (T/C) ratio. This reduction, of 0.02 standard deviations, suggests a physiological response consistent with a "flight" mechanism—characterized by heightened avoidance, cautiousness, and defensive behaviors in the face of perceived threats. Exposure to information about natural disasters likely triggered a sense of vulnerability and an instinctive shift away from confrontation ("fight") and toward withdrawal or risk aversion. Importantly, this response may not only reflect a general withdrawal from risk but also a specific reaction to social uncertainty—particularly in contexts involving potential free-riding or strategic exploitation. In such settings, a lowered T/C ratio has been linked to defensive freezing and reduced social engagement (Terburg et al., 2009; Terburg and van Honk, 2013). Participants may have interpreted the climate threat as overwhelming and uncontrollable, leading to an emotional and physiological state in which individualized, non-strategic forms of prosociality (e.g., donations) were maintained or increased, while cooperative behaviors in interdependent group settings were suppressed. These findings align with stress research showing that perceived environmental risks often elicit protective behaviors over collective engagement or risk-taking (Mehta & Josephs, 2010; Mehta et al., 2015; Nierman et al., 2017).

Figure 5. Hormonal response to the treatments.



Notes: Coefficients from the FE model representing the change in T/C after watching any of the two treatments. The outcome variable is standardized. Standard errors are clustered at the session level.

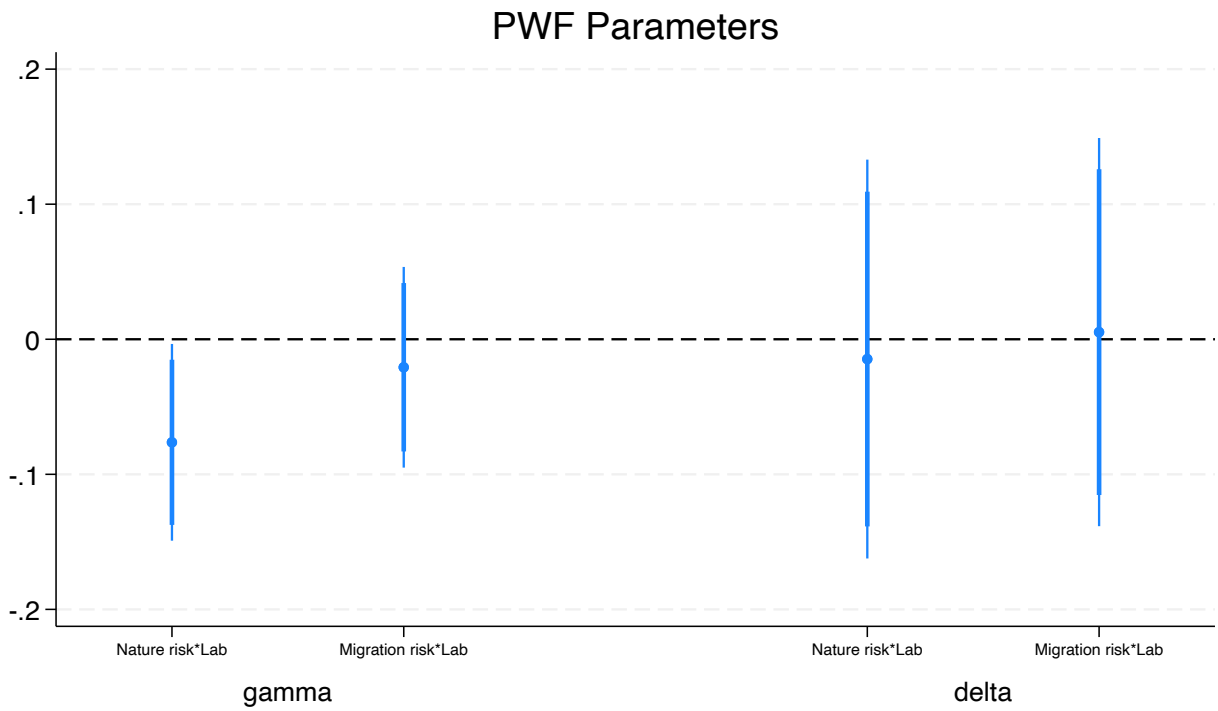
Secondly, we analyze the impact of the two treatments on risk attitudes in the context of prospect theory probability weighting functions (PWF). Risk attitude measures enable us to study a possible mechanism through which the two information treatments can influence behavior in the CRSD game. Moreover, some literature associates T/C ratio to risk-taking behavior (Nofsinger et al., 2018; Terburg et al., 2009). We collected risk attitudes measures both in the pre-experimental survey and in the lab, using lotteries in the loss domain from Choi et al. (2022), which enable us to estimate prospect theory probability weighting functions (PWF).

We use the functional form proposed by Goldstein and Einhorn (1987) in which the perceived probability follows the following functional form: $w(p) = \frac{\delta p^{\gamma}}{\delta p^{\gamma} + (1-p)^{\gamma}}$, where $\gamma, \delta \geq 0$. This function has a clear psychological interpretation. The parameter γ is the slope of the probability weighting function and captures likelihood insensitivity. The smaller is γ, the more curved the function is, the less sophisticated the agent is in distinguishing between probabilities closer to 0.5. Another consequence of a small γ is that the agent is going to perceive extremely low (high) probabilities as higher (lower) than they are. On the other hand, the parameter δ is the crossing point between the function and the 45-degree line, it represents the degree of optimism the agent has. As we chose the loss domain to mimic real-world natural disasters, the higher δ the more the agent is pessimistic about probabilities.

We estimate probability weighting functions in the pre-experimental survey and in the lab (after video-treatment exposure). Figure 6 shows that the 'nature risk' treatment is the only one to have an impact on PWF: exposure to information on climate change induced natural disasters increases probability distortion, partially confirming H4b. H4a is not confirmed as

we do not observe any impact of the two treatments on the degree of optimism. Graphical representations of PWFs are reported in Figure A9 in OA - Section 1. Tables with regression results are reported in Table A6 in OA - Section 1[5].

Figure 6. Impact of treatments on PWF parameters.

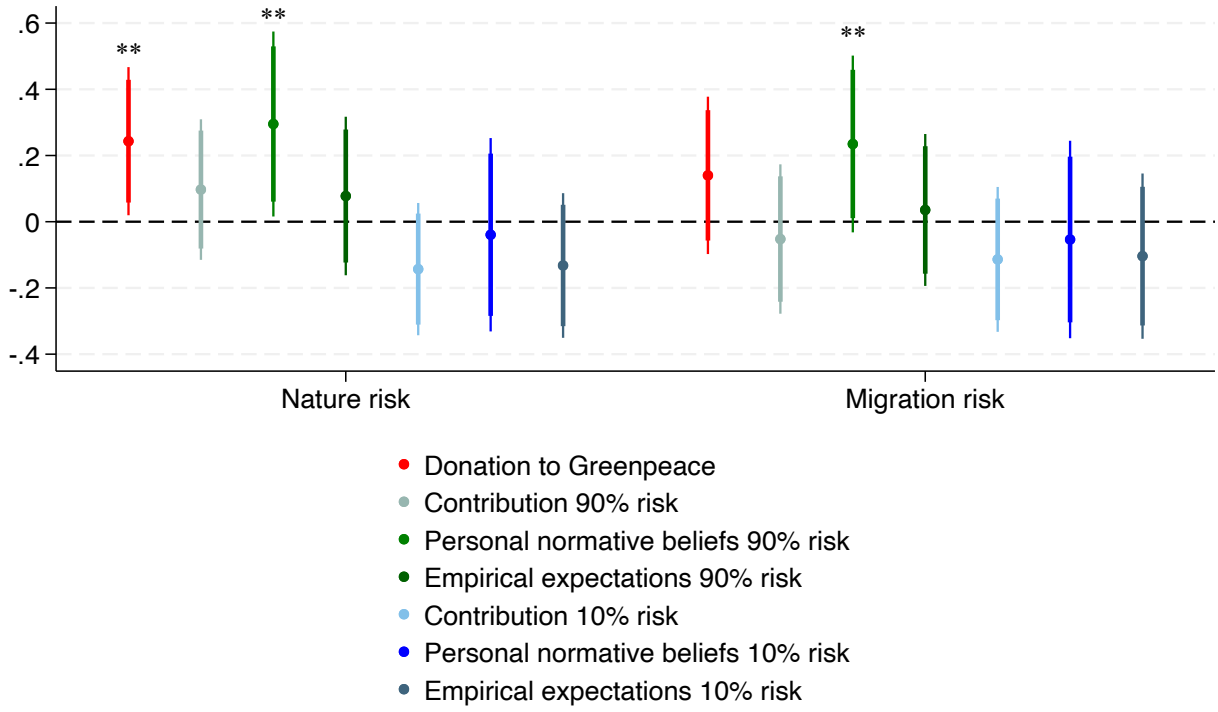


Notes: Marginal effects of the treatments from regression consider lotteries asked in the pre-experimental survey and in the lab. Standard errors are clustered at the individual level.

Similarly to the findings of Study 1, the 'nature risk' treatment exhibits a stronger impact on behavioral outcomes. Information on natural risks of climate change significantly increases donations to Greenpeace in the CDG by approximately 0.24 standard deviations. Furthermore, both treatments influence personal normative beliefs in the high-risk version of the CRSD game, with the 'nature risk' treatment showing a more pronounced effect (0.3sd vs 0.24sd). However, no treatment induces behavioral changes in the low-risk (10%) version of the CRSD game, nor for contribution and empirical expectations in the high-risk scenario. Therefore, H1b results confirmed only for normative beliefs in the high-risk (90%) game and for donations in the CDG. Moreover, these results are robust to Romano-Wolf correction for multiple hypothesis testing (Table A7b in OA - Section 1).
Figures A11 to A13 in OA - Section 1illustrate the dynamics of contributions, as well as normative and empirical expectations throughout the game. Fixed-effects regression models (Figure A10 in OA - Section 1) reveal no significant treatment effects on contributions or beliefs and expectations between rounds, suggesting that the treatments do not alter the dynamics of the CRSD game. H1b is not confirmed on environmental attitudes or support for environmental policies as no significant impact is observed (OA - Section 1, Figure A14).

[5] It is possible to observe that in the lab participants tend to have lower probability distortion (higher gamma) and to be more pessimistic (higher delta).

Figure 7. Treatments impact on CDG and CRSD game.



Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Outcome variables are standardized. Standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1 identify the Romano-Wolf p-values.

Finally, to test whether any impact on contribution is mediated by risk perception (H5), we observe first whether probability distortion in the lab, measured by the estimated γ using models from Figure 6, is correlated with contribution in the CRSD game. Correlation between these two variables is extremely low -0.028 (pwcorr of 0.244) for the 90% risk game, and -0.034 (pwcorr of 0.134) for the 10% risk game. This result, together with the absence of a direct impact of the treatments on the collective game contributions, provides no support for H5.

Overall, Study 2 confirms that climate change-related 'nature risk' information was generally more effective than 'migration risk' in influencing personal norms and behaviors, though the magnitude of this effect remains modest. Specifically, we observe that information regarding climate change-induced natural disasters increases donations in the CDG and bolsteres personal normative beliefs in the CRSD game. Moreover, information on the threat of climate migrants has only a slightly significant effect on personal norms of cooperation in the CRSD game. However, these positive impacts are not strong enough to translate into higher cooperation in the CRSD game[6].

[6] Additional analyses in Section 1 and of the Online Appendix show the other results on the pre-registered heterogeneous treatment effects. In line with Study 1, we observe that the two treatments are more effective for non-intensive SMU. This group of respondents reacts to information on natural disasters in their country with an increase in contributions, normative and empirical expectations, the latter are also affected by 'migration risk' treatment (Figure A15). Moreover, we observe a backlash effect for intensive social media users. They reduce contributions (because of 'nature risk' treatment) and empirical expectations (because of 'migration risk') over

Discussion

The two studies measure the impact of framing climate risks as either an immediate and unpredictable threat (natural disasters) or a distant and gradual threat (climate migration) on pro-environmental attitudes and behaviors, offering distinct insights into the underlying mechanisms and treatment heterogeneities across groups, in two different populations. Study 1 relies on a broader, nationally representative sample of the Italian population, serving two key purposes: i) validating the podcasts and ii) exploring the differential effects of the two climate change podcasts based on political orientation. Study 2 was conducted in a laboratory setting with a more homogenous sample characterized by a left-leaning political orientation and higher baseline awareness of environmental issues. The pre-experimental survey in Study 2 enables heterogeneity analyses based on measures unaffected by the treatments themselves. Additionally, the behavioral measures in Study 2 are money-incentivized, enhancing truthful responses and the external validity of the observed effects. Beyond these aspects, Study 2 incorporates tasks measuring risk preferences, probability distortion, and physiological responses to treatments, providing deeper insights into the mechanisms driving individual reactions.

Both studies indicate that framing climate change as an immediate risk of natural disasters within one's own country increases environmental awareness – reflected in heightened environmental concern in Study 1 and stronger normative beliefs in both Study 1 and Study 2. However, this increased awareness does not translate into greater cooperative behavior, highlighting a persistent gap between environmental beliefs and the collective action required for effective climate mitigation[7]. On the other hand, when the climate threat is perceived as distant, it does not appear threatening enough to elicit a physiological response.

Our findings indicate that risk perception does not mediate the association between the treatments and cooperation in the collective game, and therefore cannot account for the observed discrepancy between cooperative norms and actual behaviors in the CRSD game. Study 2 instead points to social uncertainty, in particular to the risk of free-riding, as a potential underlying mechanism. Participants exposed to nature-related risks exhibit a physiological change consistent with a heightened "flight" response. This may reflect an interpretation of natural disasters as overwhelming threats, prompting instinctive withdrawal rather than confrontation ("fight"). This response aligns with increased donations to pro-environmental organizations in non-strategic contexts and stronger personal environmental norms, without a corresponding rise in cooperative behavior in group settings where outcomes depend on others' contributions. Such behavior is consistent with prior evidence that defensive freezing responses – often indicated by a lowered testosterone-cortisol ratio –

rounds in the 10% risk CRSD game (Figure A16). Intensive social media participants are also induced by the 'nature risk' treatment to reduce feelings of being responsible for climate change and environmental policy support (Figure A17).

[7] Regarding political heterogeneity, results from Study 1 underscore the polarizing effects of climate change risks across different political orientations. Rightwing individuals donate more to environmental causes when faced with nature-related risks in their own country. Moreover, the effectiveness of information on climate change risks vary by exposure to social media. In both studies, we find that intensive social media users display signs of backlash to this type of information, whereas it looks effective on infrequent users (see OA – Section 1).

are especially pronounced in social contexts characterized by strategic uncertainty or the risk of exploitation. These findings suggest that exposure to natural disasters may activate self-preservation instincts, fostering generosity toward third-party causes while discouraging engagement in collective action involving social risk.

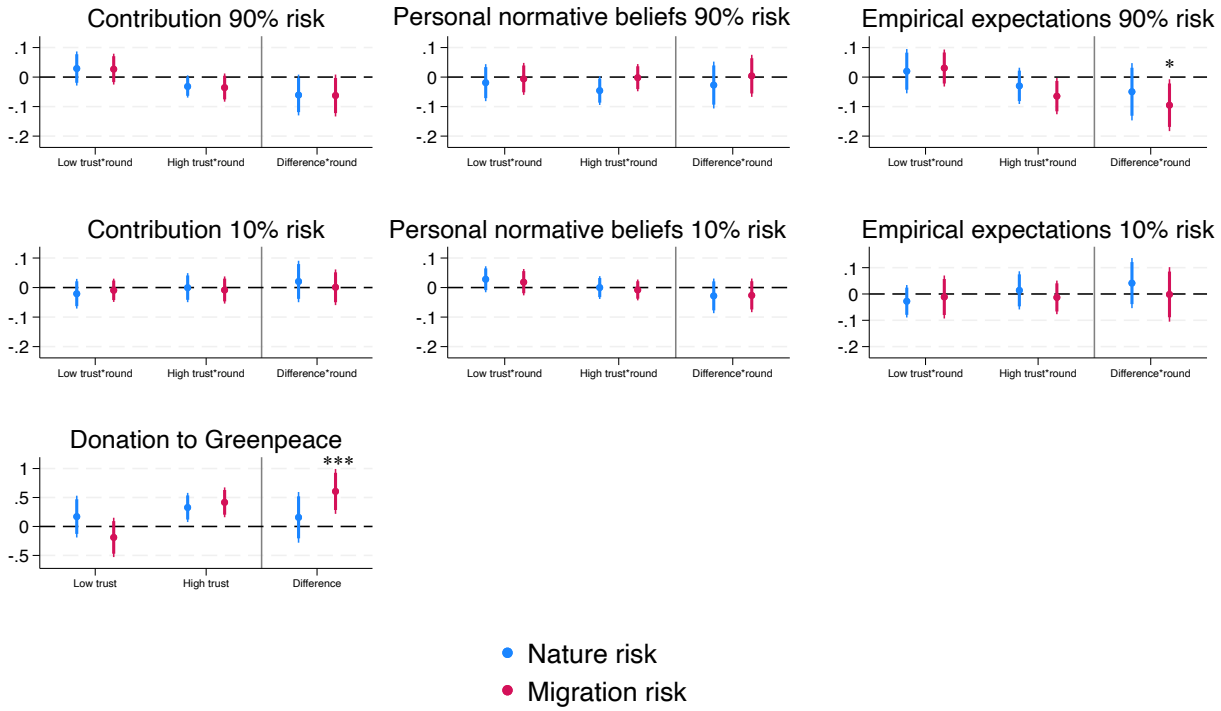
The idea that exposure to climate change risks could trigger pessimism on other's behaviors is further supported by the fact that the gap between normative beliefs and cooperation in the group task is driven by individuals with high pre-experimental levels of institutional trust. In Figure 8 these individuals, exposed to climate migration risks, tend to reduce their expectations on other players' contributions in the 90% risk CRSD game over rounds of interactions in Study 2, suggesting heightened sensitivity to free-riding (difference with low trustors significant at 5% level). However, they increase donations to Greenpeace in response to climate challenges. In particular, for the 'migration risk' treatment the difference for this outcome, between high and low trust respondents, is statistically significant at 1% level.

These results, which are all robust to Romano-Wolf corrections (Table A8b in OA – Section 1), emphasize the interplay between institutional trust, aversion to free-riding risk in strategic interactions, and the shift from personal efforts in collective action to delegating responsibility for mitigation to institutional actors. Consistently, when exposed to both treatments, high trust participants tend to reduce their contributions over time with respect to low trust respondents, further supporting the delegation mechanism (Figure 8)[8].

These findings suggest that the intention–action gap in sustainable behavior may emerge when social norms are shifting, but individuals do not perceive a critical mass adopting sustainable practices (Centola et al., 2018; Efferson et al., 2020; Granovetter, 1978; Macy, 1991; Welsch, 2022). In such contexts, the perceived lack of collective action can increase demand for coordinating institutions, prompting individuals to delegate responsibility for addressing climate risks.
Two empirical results support this mechanism. First, in Study 2, we find no statistically significant differences in the standard deviation of personal normative beliefs across groups (OA – Section 1, Table A11), suggesting that nature risks do not lead to convergence towards higher cooperative norms, possibly dampening expectations that others will act. Second, we observe signs of delegation particularly among those with high institutional trust, who are most sensitive to the absence of coordination in the CRSD game.
Consistent with this, Study 1 and recent research (e.g., Aassve et al., 2024) show that individuals with low social trust, who tend to be sceptical of others' cooperation, increase their trust in institutions after experiencing climate-related disasters (OA – Section 1, Figure A8). This points to a substitution mechanism: when social trust is low, institutional trust may rise as a compensatory response to fill the perceived gap in collective action.

[8] The result on contributions is, however, not robust to Romano-Wolf correction for multiple hypothesis testing.

Figure 8. Treatments impact on CDG and CRSD game by institutional trust.



Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) institutional trust are those that have levels of institutional trust above (below) the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level. Romano-Wolf p-values are included only on differences and are identified by *** p<0.01, ** p<0.05, * p<0.1.

Finally, another possible explanation for the divergence between normative beliefs and actual contributions is the experimenter demand effect (EDE). Participants may recognize that higher contributions are expected after everyone's exposure to climate change information—as indicated by the observed increase in normative beliefs—and may therefore opt to free-ride on others' anticipated cooperation in the CRSD game. If participants expect others to behave similarly, this could help explain the absence of effects on contributions and empirical expectations.

We can reasonably rule out this mechanism for several reasons. First, prior research shows that EDEs have limited influence on incentivized tasks and attitudinal outcomes (De Quidt et al., 2018; Haaland et al., 2023; Mummolo and Peterson, 2019), suggesting that longstanding concerns about demand effects in survey experiments may be overstated (Mummolo and Peterson, 2019). In line with this, we find similar results in both Study 1 (non-incentivized) and Study 2 (incentivized), indicating that EDE is unlikely to be a key driver of our findings. Second, concerns about EDE – and more broadly, social desirability bias – are further alleviated by the anonymity of our design and the neutral framing of task instructions, both of which are known to reduce experimenter-induced bias (Haaland et al., 2023; Stantcheva, 2023)[9]. Third, for Study 2, we examine participants' perceptions of the study's goals and how

[9] It is also worth noting that, while the provision of information by an experimenter in a position of authority could in principle trigger EDE, this element of the design in fact strengthens our study's external validity. Since our objective is to assess the impact of institutional information on environmental attitudes, presenting the information in an authoritative manner mirrors real-world communication channels and thus reinforces the relevance of our findings (Tisserand et al., 2022; Zizzo, 2010).

these relate to behavior in the CDG and CRSD games. Only 6.32% of respondents correctly identify the study's objective (i.e., to provide information to influence donations and cooperation), with rates of 2.31% in the control group, 7.75% in the 'nature risk' group, and 9.09% in the 'migration risk' group. Excluding these participants from the analysis does not alter the main results (see Table A12 and Figures A18–A19)[10].

Our results uncover a central paradox: climate risks, especially when framed as immediate threats, heighten concern and altruism but fail to foster cooperation. Instead of mobilizing collective action, they provoke withdrawal and delegation—particularly among those with high institutional trust. Bridging the gap between intention and action will require not only informing individuals, but also building confidence that others—and institutions—will act too.

Methods

This section covers the experimental protocol of the two studies, focusing on experimental manipulations[11], physiological measures, CRSD game, CDG and risk attitudes. Further information on the experimental design and details on physiological measures can be found in Section 3 of the Online Appendix. The full questionnaires can be found in Section 5 of the Online Appendix. The entire research was approved by the Ethical Committee of the University of Turin (protocol no. 0452970, date: 28/07/2023).

Study 1

For the first study we contracted the polling firm Demetra to recruit a nationally representative sample of the Italian population. The survey was administered through Qualtrics, with respondents taking on average 33 minutes to compete it. Participation was not incentivized, and respondents received 3,3€ each for their participation. The initial sample, excluding responses which did not passed the quality checks, is composed of 1,036 individuals. Quality checks exclude respondents who did not have access to audio, failed to watch the video podcast in full, did not pass at least one of the three embedded attention checks, had unreasonable completion times. For the final analysis (N=693), additional exclusions are applied to participants who demonstrated poor comprehension of the video podcast or completed the survey in times outside the 5th and 95th percentiles. Additionally, participants with poor comprehension of the CRSD game instructions are excluded from the game analysis.

The survey began with general instructions and informed consent, followed by a check of participants' device audio quality. Respondents then completed: (i) socio-demographic questions, (ii) exposure to one of the three climate change risk video-podcast or to an active control video-podcast on Earth's motion. They were asked (iii) what information was contained in the podcast (as to check their comprehension of the treatment) and if they were

[10] With the exception of contributions in the 90% risk condition shown in Figure 8, which were already not robust under the Romano-Wolf correction.
[11] The video podcast used as information treatments can be found at the following link: https://drive.google.com/drive/folders/1Utwz6ucUd9tfzuvJ8mt_e0XeYZOMgfvw?usp=sharing

already aware of this information. They received (iv) instructions on how to play the CRSD game with an example (the example they received was randomized among three possible alternatives) and answered to one game comprehension question. They (v) played the CRSD game, were asked their opinion on (vi) the environment and (vii) migration, as well as their attitudes towards (viii) redistribution, (ix) ambiguity and risk, (x) social and institutional trust. Finally, respondents were also asked their (xi) prejudice towards immigrants, (xii) political orientation, voting intentions and past voting behavior, and (xiii) media use. At the end, (xiv) an open-ended question invited comments on the study's aims and suggestions for improvement.

The four podcasts ranged in duration from 2:50 minutes (active control) to 5:30 minutes (nature + migration risk). The 'nature risk' video opened with footage of the Marmolada glacier collapse in July 2022 and discussed the link between human activity and climate change, highlighting disasters such as desertification across Italy, droughts in Piedmont in summer 2022, and the May 2023 floods in Emilia-Romagna. The 'migration risk' video used the same opening but then focused on African countries, which are disproportionately affected by climate change. It concluded by stating that since these countries are significant sources of migration to Europe, climate change could lead to increased migration flows. The 'nature + migration risk' video combined both sets of information.

The CRSD game was a single-round game where participants were given a hypothetical initial endowment of €40 and played in groups of six. If the group collectively contributed at least €120 to a common pool, participants could keep the remainder of their endowment; otherwise, they risked losing their remaining endowment with a specified probability. The probability of loss was described ambiguously using an Ellsberg urn containing an unknown ratio of white and orange balls. Respondents were also informed that the common pool would be invested in a common project. Participants were asked about their perceived probability of a shock, their contribution to the pool, their personal normative beliefs (how much people should contribute), and their empirical expectations (how much they thought others would contribute). They then allocated hypothetical funds from the common pool (€120) across five causes: blood cancer research, Medicins sans Frontiers, migrants' ONLUS, environmental ONLUS, and animal protection ONLUS. These causes were chosen to be broadly recognizable and specific in their objectives.

Before the CRSD, and after reading the game instructions for the first time, respondents were asked randomly one (out of three) game comprehension question. If they answered correctly, they proceeded; otherwise, they reviewed the instructions, potentially with a randomized alternative example, and were asked the same comprehension question. This process was repeated up to four times. After four unsuccessful attempts, participants were allowed to continue the survey regardless of their answer. We excluded from the analysis of game outcomes respondents that made three or more mistakes out of four attempts of the same game comprehension question.

Table A13 (OA – Section 1) shows a summary of the variables used in the analysis of Study 1, whereas Table A14 reports summary statistics on the analysis sample (N=693 participants). The regression models we used for analysis in Figure 1, 2, A1, A2 are based on the following specification:

$$y_i = \alpha + \beta treat_i + \mathrm{X}_i\pi + \varepsilon_i$$

where: y_i is the outcome of interest (i.e. contribution to the CRSD game, donation to environmental project, etc.), $treat_i$ is a categorical variable expressing whether the individual falls into the control group or any of the three treatment groups, X_i is a set of control which is specified in the notes for each set of results, ε_i is the error term, β is the parameter of interest.
Regression models used for heterogeneity analysis (i.e. Figure 3, 4, A3-8) are as follows:

$$y_i = \alpha + \beta treat_i + \phi w_i + \tau treat_i \times w_i + \mathrm{X}_i\pi + \varepsilon_i$$

where w_i is a dummy variable indicating whether the individual belongs to a specific subpopulation (i.e. rightwing voter, high trust, intensive SMU, etc.). In this case the parameters of interest are $\beta, \tau, \beta + \tau$. Where β captures the impact of the treatments on the outcome for respondents who do not belong to the group identified by w_i, $\beta + \tau$ captures the impact of the treatment for respondents in that group and τ captures the differential treatment effect for the group.

Study 2

The second study is a lab experiment conducted in two phases. We recruited 600 University of Turin students through the CLOSER lab online platform. Participants completed an online pre-experimental survey 10–21 days before attending the lab session. Of these, 459 students attended the experimental sessions at CLOSER lab, along with an additional 14 students, resulting in 473 participants. We exclude participants with poor comprehension of the information treatment, yielding a final analysis sample of 451 students. For the hormonal analysis, we further reduce the sample to 372 observations due to safety measures (e.g., participants with flu symptoms or those engaged in activities affecting hormonal responses are excluded). Additionally, for the CRSD game outcomes, participants with poor comprehension of the game instructions are excluded.
The pre-experimental survey was distributed through Qualtrics, taking respondents an average of 32 minutes to complete. We conducted 24 lab sessions from the 26th of February 2024 to the 20th of March 2024. Lab sessions hosted from a minimum of 12 participants to a maximum of 24 and lasted on average 65 minutes.

In the pre-experimental online survey, after general instructions and informed consent, respondents were asked to create an alphanumeric code that is used to match their responses to those of the lab session while ensuring anonymity. The survey included: (i) socio-demographics, (ii) un-incentivized lottery tasks à la Choi et al. (2022), (iii) one attention check, (iv) environmental attitudes questions, (v) social and institutional trust, (vi) prejudice towards immigrants, (vii) time preferences, (viii) numeracy, (ix) political orientation and past voting behavior.
In the lab, participants were provided general instructions and informed consent, as well as they were asked to generate their alphanumeric code. They proceeded with the collection of their first saliva sample using oral swab, supervised by chemistry lab experts[12]. After checking the audio of their lab device (pc), they were (i) exposed to either the 'nature risk' treatment, the 'migration risk' treatment or active control. Randomization was at the session level, meaning that all participants in the same lab session viewed the same video-podcast. They completed (ii) incentivized lottery tasks à la Choi et al. (2022) and non-incentivized time preference elicitation tasks. Students were asked (iii) what information was contained in the

[12] See OA – Section 3 for further details and Conzo et al. (2021) for a similar procedure.

podcast (as to check their comprehension of the treatment) and if they were already aware of this information. They played the incentivized (iv) Charity Dictator Game (CDG) before receiving (v) Collective Risk Social Dilemma (CRSD) game instructions and comprehension questions. At this point students were asked to collect their second saliva sample (approximately 15-20 mins after exposure to the video-podcast, to be able to observe any hormonal response). They played (vi) 10 rounds of the incentivized CRSD game with stranger matching. Finally, participants were asked to answer questions on (vii) environmental attitudes, (viii) immigration attitudes and (ix) perceived goal of the study.

The information treatments featured the same information to those in Study 1 (we excluded the complete treatment). In the CDG, participants were endowed 15€ and decided how much to keep for themselves and how much they wanted to donate to Greenpeace. The CRSD game differed slightly to Study 1: participants played in groups of four with stranger matching. They received €15 each and collectively needed €30 in the common pool to secure their savings with 100% probability. Otherwise, their savings could be lost with either a 10% or 90% probability. This probability manipulation allows us to distinguish a low and high risk scenario, and it was kept constant for all 10 rounds. Each round, participants decided how much to contribute, their normative beliefs (how much others should contribute), and their empirical expectations (how much others would contribute). Feedback on contributions, payoffs, and whether the group avoided the shock was provided after each round. Endowments were reset after each round, and the common pool contributions were donated to climate change research.

Lottery tasks derived from Choi et al. (2022) were implemented as follows in the pre-experimental survey, participants completed 15 hypothetical lottery tasks in the loss domain, varying in loss probability (5%, 25%, 50%, 75%, 95%) and payoffs. The elicitation of the certain equivalent was done through Multiple Price Listing (MPL). We used one block question for each lottery task. Each decision block involved 11 choices between a risky lottery (left column) and a safe option (right column). The safe option becoming progressively more attractive (lower) going down the matrix. Participants were asked to choose a unique switching point between the two options, resulting in the left column chosen before the switching point, and the left column after it. In the lab students played 5 lottery tasks with same payoffs and varying probabilities of loss (5%, 25%, 50%, 75%, 95%). Certain equivalent was elicited following a three steps staircase approach (similar to the GPS, Falk et al., 2023, 2016). Respondents were first asked to choose between a risky and safe option. If they chose the safe (risky) choice, they were asked to choose between the same lottery and a lower (higher) safe option, narrowing down their certain equivalent range.
Payments included a €5 participation fee, the payoff of one randomly selected lab lottery task from the 15 choices (5 tasks * 3 steps), and the payoff of one random round from the 10 CRSD rounds or the CDG. Payments ranged from €5 to €25, with an average of €15.85. Payment and debriefing were conducted outside the lab.

Table A15 (OA – Section 1) shows a summary of the variables used in the analysis of Study 2, whereas Table A16 reports summary statistics on the analysis sample (N=451 participants).

In the analysis of hormonal data in Study 2, we estimate the following equation:

$$tc_{it} = \alpha + \theta post_t + \rho treat_i \times post_t + \mu_i + \varepsilon_{it}$$

where: tc_{it} is the testosterone to cortisol ratio for respondent i measured at time t (before or after podcast exposure), $treat_i$ is a categorical variable indicating whether the respondent was exposed to the 'nature risk', 'migration risk' treatment or control, $post_t$ is a dummy variable that takes value of 1 for the post-exposure observation, μ_i is an individual fixed effect, ε_{it} is the error term, ρ is the parameter of interest.
In order to evaluate the differential treatment impact on T/C ratio the model used is:

$$tc_{it} = \alpha + \theta post_t + \rho treat_i \times post_t + \tau post_t \times w_i + \lambda treat_i \times post_t \times w_i + \mu_i + \varepsilon_{it}$$

w_i is a dummy variable indicating whether the individual belongs to a specific subpopulation (i.e. high trust, intensive SMU, etc.). In this case the parameters of interest are $\rho, \lambda, \rho + \lambda$. While ρ represents the treatment impact on respondents who do not belong to the group specified by w_i, $\rho + \lambda$ captures the treatment effect on this specific subgroup, and λ represents the difference between the two.

To analyze lottery outcomes, as in Choi et al. (2022), we follow the estimation procedure proposed by Bruhin et al. (2010) and l'Haridon and Vieider (2019). The observed certain equivalent $\widehat{CE(L)}$ of lottery L, elicited from the lottery task, is equal to the one predicted by our model $CE(L)$ using risk probabilities w(p) = $\frac{\delta p^{\gamma}}{\delta p^{\gamma} + (1-p)^{\gamma}}$, assuming linear utility, plus an error term $\varepsilon(L)$. The error term is normally distributed $N(0, \mu(L)^2)$, where the error term $\mu(L)$ is called Fechner error (Hey and Orme, 1994; Loomes and Sugden, 1995; Loomes, 2005). The error depends on the difference between the high and low outcome of the lottery. The full set of parameters γ, δ, μ is estimated through ML[13]. In order to estimate the impact of the treatments on PWF parameters we specify these parameters in the following linear form:

$$par_{it} = \alpha + \beta treat_i + \theta lab_t + \rho treat_i \times lab_t + \mathrm{X}_i + \varepsilon_{it}$$

where: par_{it} is one of the parameters for respondent i at time t (in the pre-experimental survey or in the lab), $treat_i$ is a categorical variable indicating whether the respondent was exposed to the 'nature risk', 'migration risk' treatment or control, lab_t is a dummy variable that takes value of 1 for the lab observation, X_i are individual time invariant controls, ε_{it} is the error term, ρ is the parameter of interest.
To evaluate the impact of moderators in this relationship we specify PWF parameters with this linear form:

$$par_{it} = \alpha + \beta treat_i + \theta lab_t + \phi w_i + \rho treat_i \times lab_t + \sigma treat_i \times w_i + \tau lab_t \times w_i + \lambda treat_i \times lab_t \times w_i + \mathrm{X}_i + \varepsilon_{it}$$

as w_i is a dummy variable indicating whether the individual belongs to a specific subpopulation (i.e. high trust, intensive SMU, etc.), the parameters of interest are $\rho, \lambda, \rho + \lambda$. While ρ represents the treatment impact on respondents who do not belong to the group specified by w_i, $\rho + \lambda$ captures the treatment effect on this specific subgroup, and λ represents the difference between the two.

To estimate the treatment effect on outcomes of the CRSD game we used two different models: either a random effect model or a fixed effect model. In the random effect we used the following regression specification, which allows us to capture the average impact of treatments over rounds:

$$y_{it} = \alpha + \beta treat_i + \mathrm{X}_{it}\pi + U_i + \varepsilon_{it}$$

where: y_{it} is the outcome of interest in round t (i.e. contribution to the CRSD game), $treat_i$ is a categorical variable expressing whether the individual falls into the control group or any of

[13] See Choi et al. (2022) for more details on the estimation procedure.

the two treatment groups, X_{it} is a set of controls, U_i is the individual random error, ε_{it} is the error term, β is the parameter of interest.
Estimating heterogeneous treatment effect the model becomes:

$$y_{it} = \alpha + \beta treat_i + \phi w_i + \tau treat_i \times w_i + \mathrm{X}_{it}\pi + U_i + \varepsilon_{it}$$

where: w_i is a dummy variable indicating whether the individual belongs to a specific subpopulation (i.e. high trust, intensive SMU, etc.), the parameters of interest are $\beta, \tau, \beta + \tau$. While β represents the treatment impact on respondents who do not belong to the group specified by w_i, $\beta + \tau$ captures the treatment effect on this specific subgroup, and τ represents the difference between the two.
In the fixed effect model, which allows us to capture the impact of the treatments on the dynamic behavior of respondents, the regression specification reads as follows:

$$y_{it} = \alpha + \theta round_t + \rho treat_i \times round_t + \mathrm{X}_{it}\pi + \mu_i + \varepsilon_{it}$$

$round_t$ is a continuous variable indicating the round of the CRSD game the observation refers to. μ_i is the individual fixed effect. The parameter of interest is ρ.

$$y_{it} = \alpha + \theta round_t + \rho treat_i \times round_t + \tau round_t \times w_i + \lambda treat_i \times round_t \times w_i + \mathrm{X}_{it}\pi + \mu_i + \varepsilon_{it}$$

is the specification used to estimate the differential treatment effects for subpopulations. w_i is a dummy variable indicating whether the individual belongs to a specific subpopulation (i.e. high trust, intensive SMU, etc.), the parameters of interest are $\rho, \lambda, \rho + \lambda$. While ρ represents the treatment impact on respondents who do not belong to the group specified by w_i, $\rho + \lambda$ captures the treatment effect on this specific subgroup, and λ represents the difference between the two.

For all other outcomes we use the same regression models as in Study1.

Ethics approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Bioethics Committee of the University of Turin on 28/07/2023 (no. 0452970).

Consent to participate

Informed consent was obtained from all individual participants included in the study.

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Online Appendix

Sections

Section 1

Table A1a. Regression results for Figure 1: "Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game".

VARIABLES	(1) Contribution	(2) Personal normative beliefs	(3) Empirical expectations	(4) Donation to environmental project	(5) Donation to migrant project
Nature risk	0.0494	0.208**	0.168	0.511***	-0.0249
	(0.105)	(0.105)	(0.102)	(0.112)	(0.102)
Migration risk	0.183	0.210*	0.225**	0.220**	0.339***
	(0.113)	(0.112)	(0.109)	(0.0918)	(0.108)
Nature + Migration risk	-0.00920	0.138	0.157	0.196**	0.186*
	(0.113)	(0.109)	(0.116)	(0.0935)	(0.106)
Age	0.00138	0.00485	0.00298	0.00162	-0.00336
	(0.00312)	(0.00313)	(0.00305)	(0.00275)	(0.00291)
Female	0.0744	0.133*	0.0293	-0.129*	-0.0437
	(0.0800)	(0.0797)	(0.0793)	(0.0744)	(0.0775)
Bachelor	0.192**	0.264***	0.0144	-0.0384	0.109
	(0.0817)	(0.0819)	(0.0811)	(0.0753)	(0.0773)
Duration	0.000270**	0.000158	0.000193*	-0.000227**	-1.20e-05
	(0.000107)	(0.000105)	(0.000103)	(8.99e-05)	(9.23e-05)
Constant	-0.575***	-0.736***	-0.552***	0.0576	0.0302
	(0.200)	(0.192)	(0.194)	(0.177)	(0.207)
Observations	620	619	619	689	689
R-squared	0.025	0.034	0.016	0.049	0.027

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A1b. Romano-Wolf correction for Figure 1: "Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game".

VARIABLES	(1) Contribution	(2) Personal normative beliefs	(3) Empirical expectations	(4) Donation to environmental project	(5) Donation to migrant project
Nature risk	**0.0494**	**0.208**	**0.168**	**0.511**	**-0.0249**
p-value	*0.6382*	*0.0473*	0.1015	0.0000	*0.8075*
Rwolf p-value	*0.9461*	*0.2874*	0.4371	0.0020	*0.9641*
Migration risk	**0.183**	**0.210**	**0.225**	**0.220**	**0.339**
p-value	*0.1051*	*0.0604*	*0.0389*	*0.0168*	*0.0018*
Rwolf p-value	*0.4371*	*0.3373*	*0.2774*	*0.1637*	*0.0259*
Nature + Migration risk	**-0.00920**	**0.138**	**0.157**	**0.196**	**0.186**
p-value	*0.9350*	*0.2082*	*0.1768*	*0.0370*	*0.0809*
Rwolf p-value	*0.9641*	*0.5629*	*0.5629*	*0.2774*	*0.4032*
Observations	620	619	619	689	689

Table A2a. Regression results for Figure 2: "Impact of the treatments on environmental concern and institutional trust".

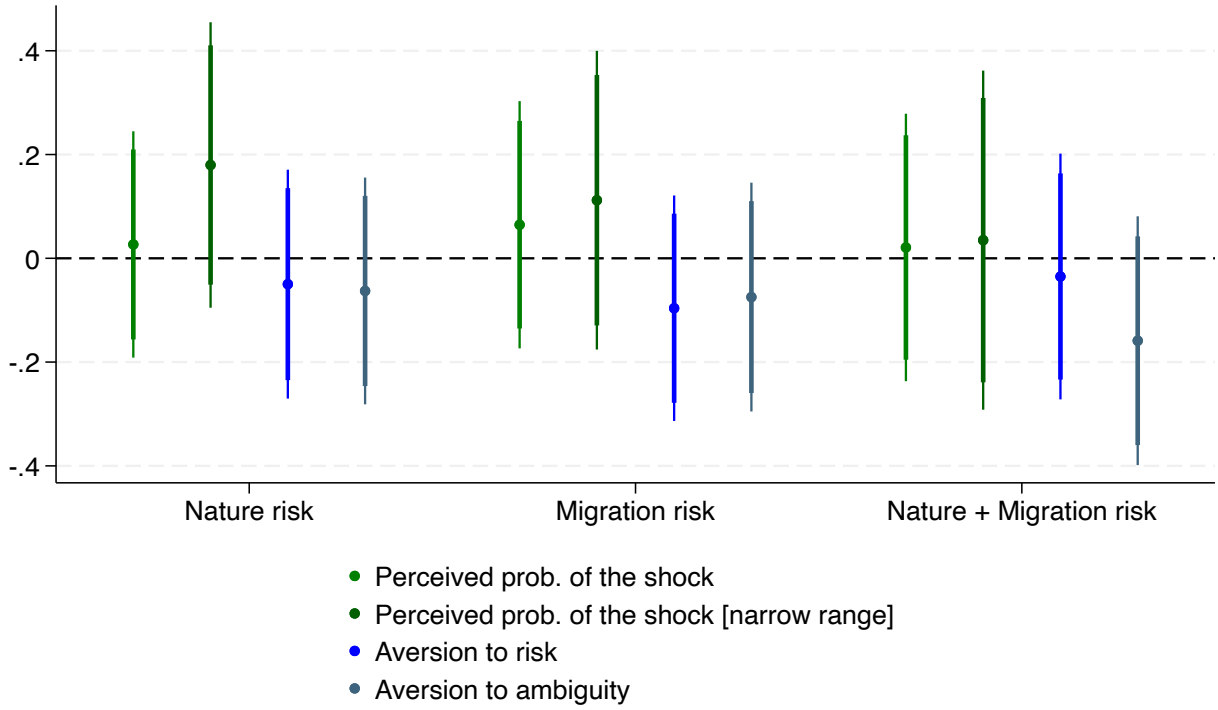
VARIABLES	(1) Environmental concern (emotional)	(2) Environmental concern (cognitive)	(3) Institutional trust (pca)
Nature risk	0.366***	0.392***	0.103
	(0.0984)	(0.150)	(0.212)
Migration risk	0.0965	0.128	-0.140
	(0.108)	(0.176)	(0.226)
Nature + Migration risk	0.423***	0.228	-0.0412
	(0.107)	(0.174)	(0.236)
Age	-0.00440	-0.0105**	-0.00128
	(0.00286)	(0.00449)	(0.00590)
Female	0.160**	0.405***	-0.229
	(0.0758)	(0.120)	(0.163)
Bachelor	0.0648	0.0497	0.574***
	(0.0761)	(0.121)	(0.166)
Duration	2.38e-05	0.000203	0.000385
	(9.91e-05)	(0.000149)	(0.000241)
Constant	-0.129	-0.143	-0.601
	(0.191)	(0.294)	(0.438)
Observations	689	689	575
R-squared	0.047	0.038	0.030

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2b. Romano-Wolf correction for Figure 2: "Impact of the treatments on environmental concern and institutional trust".

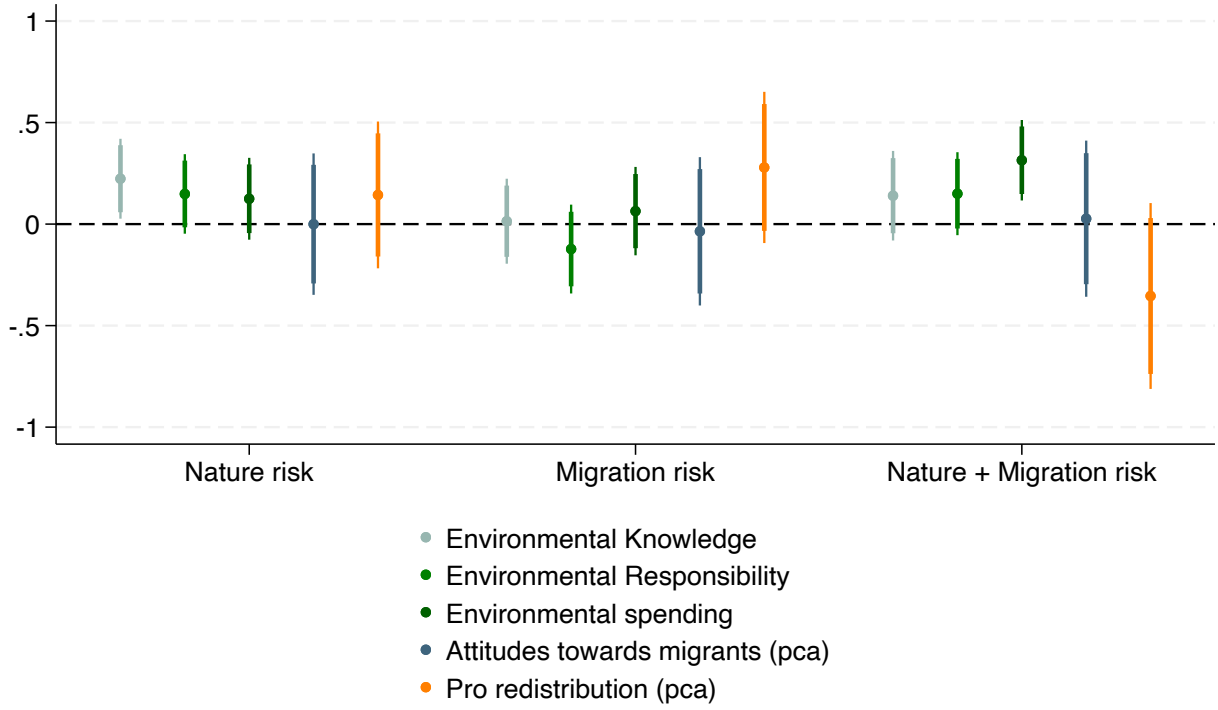
VARIABLES	(1) Environmental concern (emotional)	(2) Environmental concern (cognitive)	(3) Institutional trust (pca)
Nature risk	**0.366**	**0.392**	**0.103**
p-value	*0.0002*	*0.0093*	*0.6264*
Rwolf p-value	*0.0080*	*0.0798*	*0.9082*
Migration risk	**0.0965**	**0.128**	**-0.140**
p-value	*0.3701*	*0.4650*	*0.5370*
Rwolf p-value	*0.8663*	*0.9082*	*0.9082*
Nature + Migration risk	**0.423**	**0.228**	**-0.0412**
p-value	*0.0001*	*0.1906*	*0.8616*
Rwolf p-value	*0.0060*	*0.6507*	*0.9082*
Observations	689	689	575

Figure A1. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity aversion.



Notes: Figure shows coefficients from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors.

Figure A2. Impact of the treatments on attitudes towards cc, immigration and redistribution.



Notes: Figure shows coefficients from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors.

Table A3a. Regression results for Figure 3: "Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game for rightwing individuals".

VARIABLES	(1) Contribution	(2) Personal normative beliefs	(3) Empirical expectations	(4) Donation to environmental project	(5) Donation to migration project
Nature risk	-0.0355	0.0225	-0.0655	0.276*	0.0263
	(0.148)	(0.151)	(0.146)	(0.149)	(0.137)
Migration risk	0.175	0.168	0.162	0.177	0.551***
	(0.156)	(0.144)	(0.152)	(0.112)	(0.146)
Nature + Migration risk	-0.117	0.0150	0.111	0.151	0.230*
	(0.147)	(0.148)	(0.157)	(0.116)	(0.136)
Voted Rightwing	0.0858	-0.0304	-0.157	-0.173	-0.539***
	(0.203)	(0.216)	(0.204)	(0.168)	(0.155)
Nature risk* Voted Rightwing	-0.0491	0.180	0.431	0.535*	-0.00851
	(0.275)	(0.289)	(0.283)	(0.296)	(0.203)
Migration risk* Voted Rightwing	-0.147	0.0780	0.295	0.201	-0.372
	(0.301)	(0.299)	(0.283)	(0.254)	(0.238)
Nature + Migration risk* Voted Rightwing	0.0883	0.173	0.119	-0.0643	-0.215
	(0.298)	(0.298)	(0.320)	(0.238)	(0.224)
Age	0.00327	0.00876**	0.00191	0.00214	0.00144
	(0.00375)	(0.00375)	(0.00371)	(0.00297)	(0.00319)
Female	0.105	0.165*	0.0883	-0.148*	-0.131
	(0.0950)	(0.0940)	(0.0962)	(0.0831)	(0.0800)
Bachelor	0.200**	0.284***	0.00780	-0.0367	0.0615
	(0.0977)	(0.0973)	(0.0976)	(0.0869)	(0.0795)
Duration	0.000249*	0.000125	0.000236*	-0.000156	-0.000122
	(0.000130)	(0.000130)	(0.000134)	(0.000103)	(9.97e-05)
Constant	-0.635***	-0.866***	-0.518**	-0.00169	0.142
	(0.243)	(0.232)	(0.236)	(0.196)	(0.210)
Observations	450	450	450	500	500
R-squared	0.028	0.042	0.029	0.053	0.158

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A3b. Romano Wolf correction for Figure 3: "Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game for rightwing individuals".

VARIABLES	(1) Contribution	(2) Personal normative beliefs	(3) Empirical expectations	(4) Donation to environmental project	(5) Donation to migration project
Nature risk	**-0.0355**	**0.0225**	**-0.0655**	**0.276**	**0.0263**
p-value	*0.8103*	*0.8814*	*0.6547*	*0.0648*	*0.8471*
Rwolf p-value	*1.0000*	*1.0000*	*1.0000*	*0.7385*	*1.0000*
Migration risk	**0.175**	**0.168**	**0.162**	**0.177**	**0.551**
p-value	*0.2626*	*0.2440*	*0.2871*	*0.1149*	*0.0002*
Rwolf p-value	*0.9880*	*0.9880*	*0.9880*	*0.8862*	*0.0140*
Nature + Migration risk	**-0.117**	**0.0150**	**0.111**	**0.151**	**0.230**
p-value	*0.4269*	*0.9189*	*0.4808*	*0.1947*	*0.0929*
Rwolf p-value	*0.9960*	*1.0000*	*0.9980*	*0.9701*	*0.8244*
Nature risk* Voted Rightwing	**-0.0491**	**0.180**	**0.431**	**0.535**	**-0.00851**
p-value	*0.8585*	*0.5328*	*0.1278*	*0.0720*	*0.9665*
Rwolf p-value	*1.0000*	*1.0000*	*0.8922*	*0.7545*	*1.0000*
Migration risk* Voted Rightwing	**-0.147**	**0.0780**	**0.295**	**0.201**	**-0.372**
p-value	*0.6242*	*0.7942*	*0.2971*	*0.4292*	*0.1187*
Rwolf p-value	*1.0000*	*1.0000*	*0.9880*	*0.9960*	*0.8862*
Nature + Migration risk* Voted Rightwing	**0.0883**	**0.173**	**0.119**	**-0.0643**	**-0.215**
p-value	*0.7672*	*0.5616*	*0.7096*	*0.7876*	*0.3375*
Rwolf p-value	*1.0000*	*1.0000*	*1.0000*	*1.0000*	*0.9920*
Observations	450	450	450	500	500
Nature risk	-0.0355	0.0225	-0.0655	0.276	0.0263

Table A4a. Regression results for Figure 4: "Impact of the treatments on environmental concern and institutional trust for rightwing individuals".

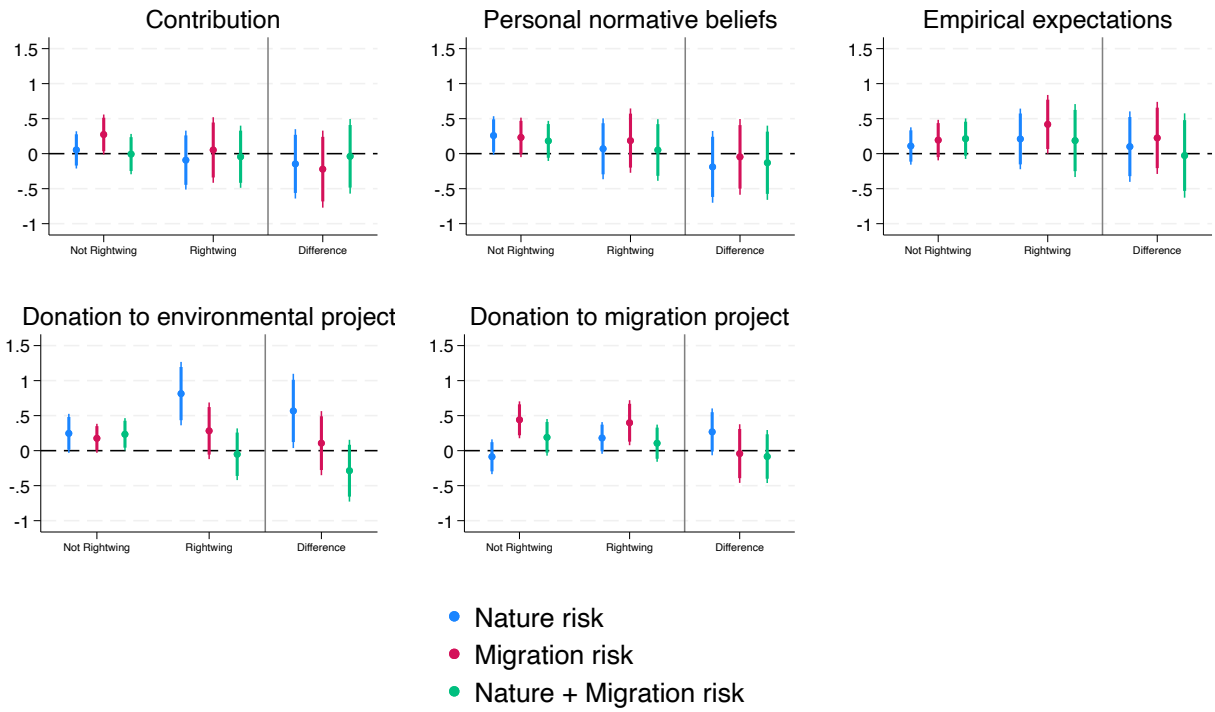
VARIABLES	(1) Environmental concern (emotional)	(2) Environmental concern (cognitive)	(3) Institutional trust (pca)
Nature risk	0.143	0.0684	0.431
	(0.133)	(0.193)	(0.266)
Migration risk	0.0749	0.325*	0.219
	(0.135)	(0.194)	(0.270)
Nature + Migration risk	0.182	0.123	0.501*
	(0.129)	(0.201)	(0.277)
Voted Rightwing	-0.609***	-1.116***	0.960***
	(0.179)	(0.273)	(0.347)
Nature risk* Voted Rightwing	0.213	0.540	-0.984**
	(0.249)	(0.384)	(0.483)
Migration risk* Voted Rightwing	0.0892	-0.0344	-0.933*
	(0.283)	(0.464)	(0.550)
Nature + Migration risk* Voted Rightwing	0.169	-0.306	-1.938***
	(0.284)	(0.459)	(0.530)
Age	-0.00185	-0.00559	-0.00407
	(0.00327)	(0.00494)	(0.00641)
Female	0.182**	0.486***	-0.246
	(0.0863)	(0.133)	(0.170)
Bachelor	0.0549	0.0824	0.432**
	(0.0875)	(0.136)	(0.173)
Duration	-1.17e-05	0.000170	0.000265
	(0.000108)	(0.000166)	(0.000260)
Constant	0.0848	0.0532	-0.417
	(0.216)	(0.334)	(0.466)
Observations	500	500	499
R-squared	0.086	0.154	0.051

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A4b. Romano Wolf corrections for Figure 4: "Impact of the treatments on environmental concern and institutional trust for rightwing individuals".

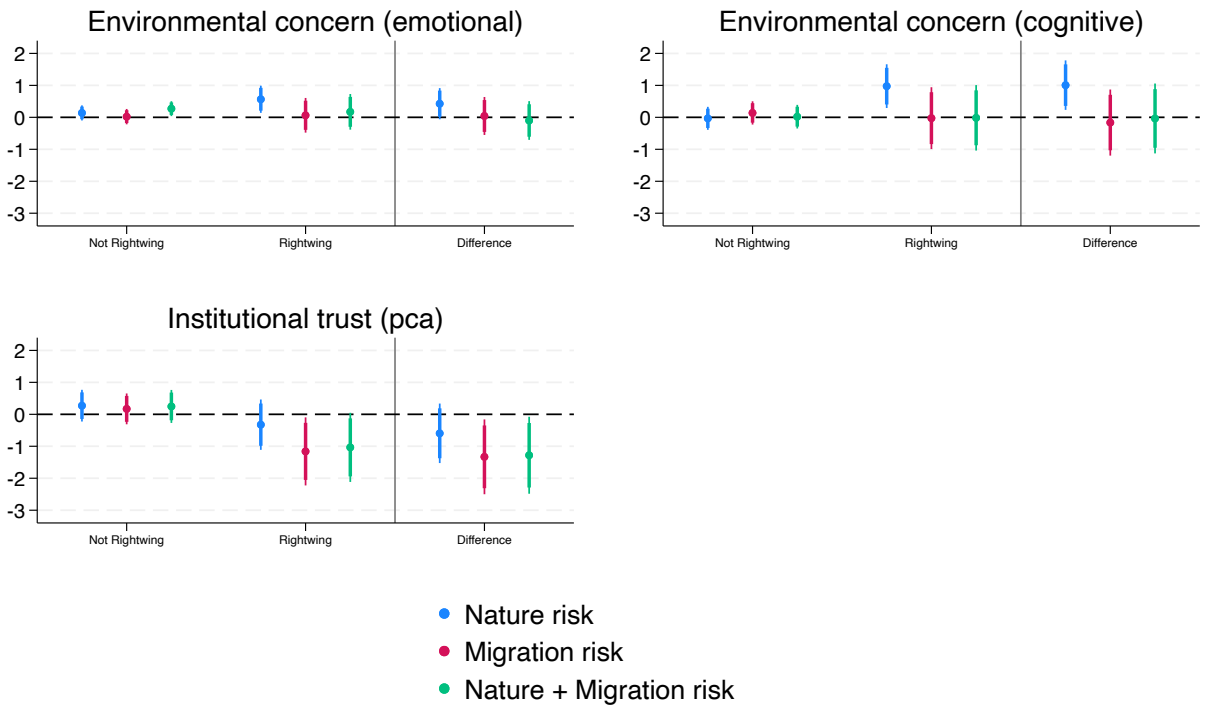
VARIABLES	(1) Environmental concern (emotional)	(2) Environmental concern (cognitive)	(3) Institutional trust (pca)
Nature risk	**0.143**	**0.0684**	**0.431**
p-value	*0.2833*	*0.7229*	*0.1065*
Rwolf p-value	*0.9082*	*0.9900*	*0.6806*
Migration risk	**0.0749**	**0.325**	**0.219**
p-value	*0.5784*	*0.0946*	*0.4176*
Rwolf p-value	*0.9900*	*0.6627*	*0.9701*
Nature + Migration risk	**0.182**	**0.123**	**0.501**
p-value	*0.1610*	*0.5389*	*0.0711*
Rwolf p-value	*0.8004*	*0.9900*	*0.6188*
Nature risk* Voted Rightwing	**0.213**	**0.540**	**-0.984**
p-value	*0.3930*	*0.1601*	*0.0419*
Rwolf p-value	*0.9621*	*0.8004*	*0.4631*
Migration risk* Voted Rightwing	**0.0892**	**-0.0344**	**-0.933**
p-value	*0.7529*	*0.9409*	*0.0902*
Rwolf p-value	*0.9900*	*0.9900*	*0.6567*
Nature + Migration risk* Voted Rightwing	**0.169**	**-0.306**	**-1.938**
p-value	*0.5532*	*0.5049*	*0.0003*
Rwolf p-value	*0.9900*	*0.9800*	*0.0060*
Observations	500	500	499

Figure A3. Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game by self-reported political orientation.



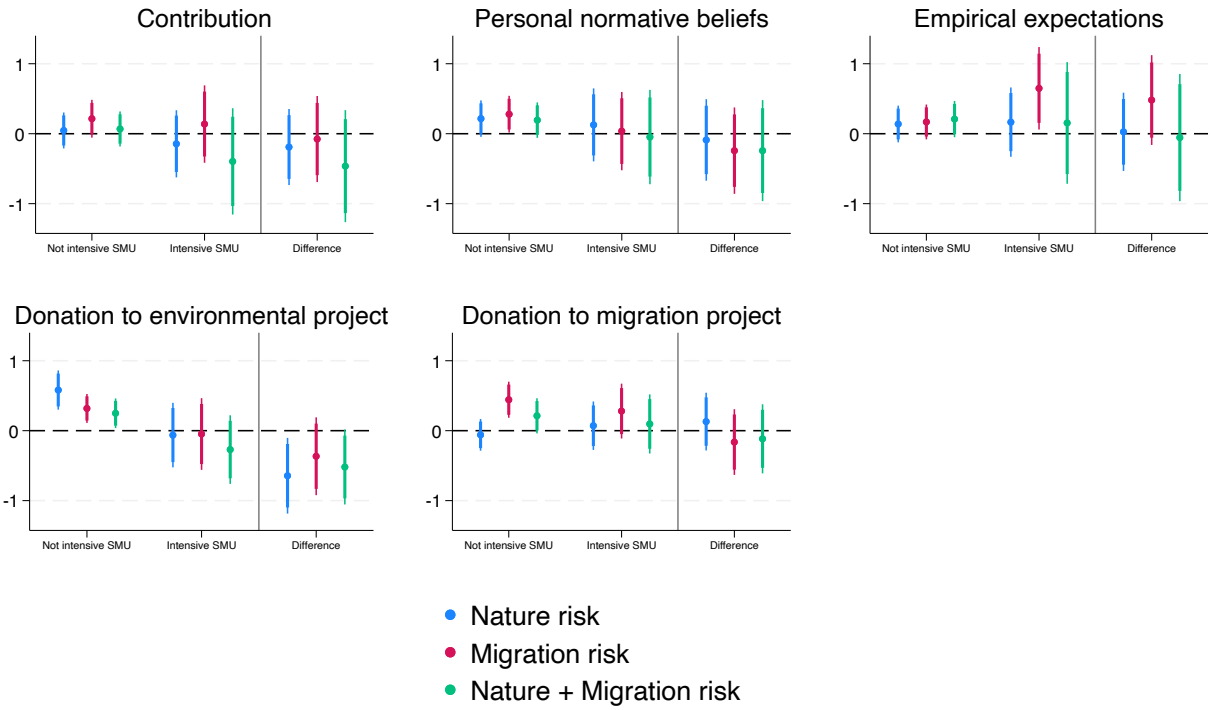
Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. Rightwing respondents are those who reported to lie on the right of the political spectrum.

Figure A4. Impact of the treatments on environmental concern and institutional trust by self-reported political orientation.



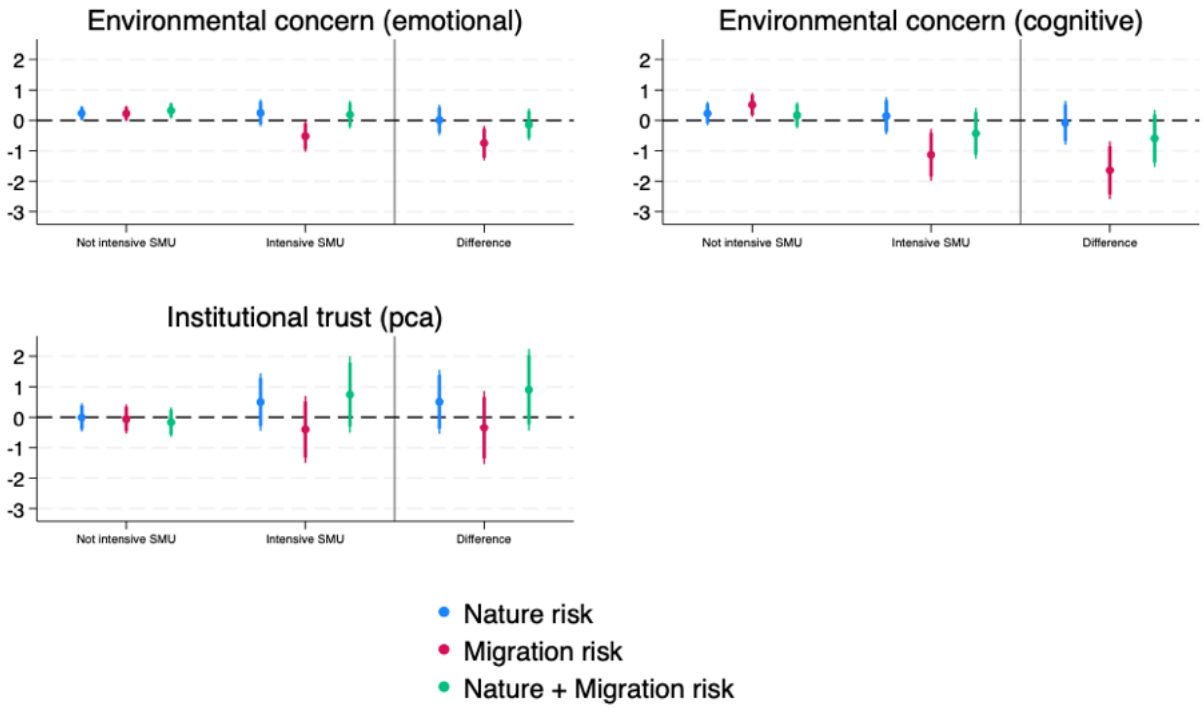
Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. Rightwing respondents are those who reported to lie on the right of the political spectrum.

Figure A5. Impact of the treatments on contribution, personal normative beliefs, empirical expectations and donations in the CRSD game by social media use.



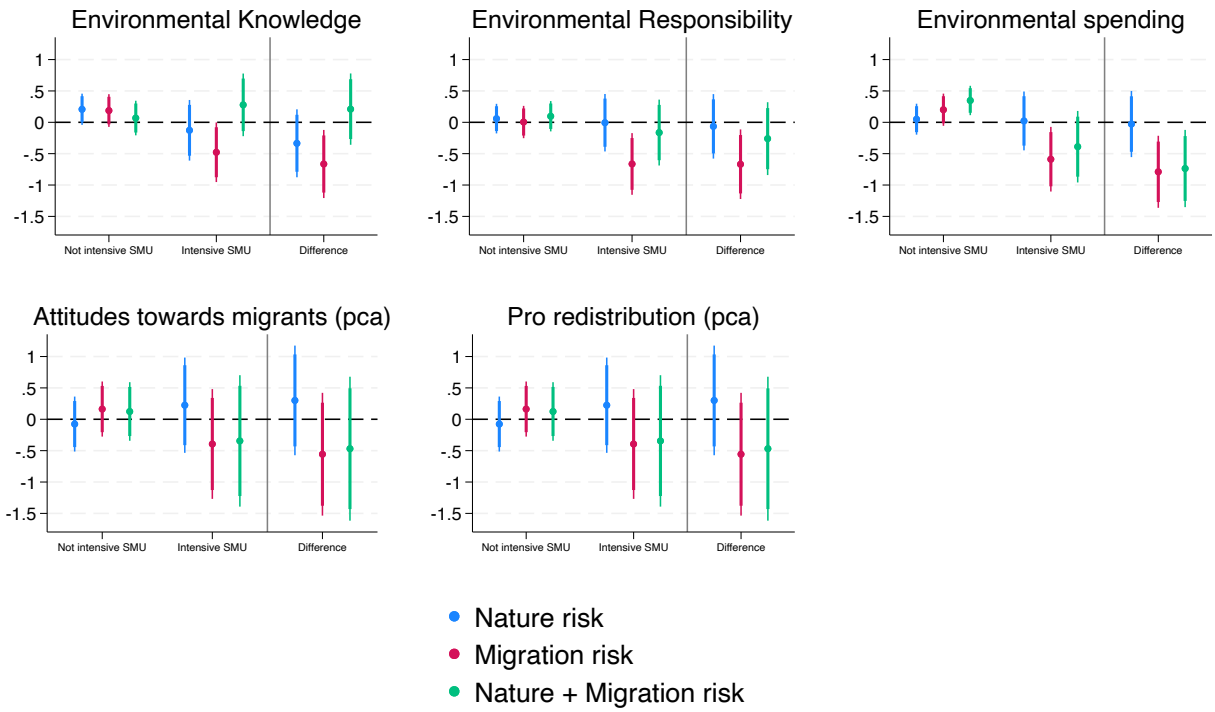
Notes: Figure shows marginal effects of treatment from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with reported social media use above/below the sample median.

Figure A6. Impact of the treatments on environmental concern and institutional trust by social media use.



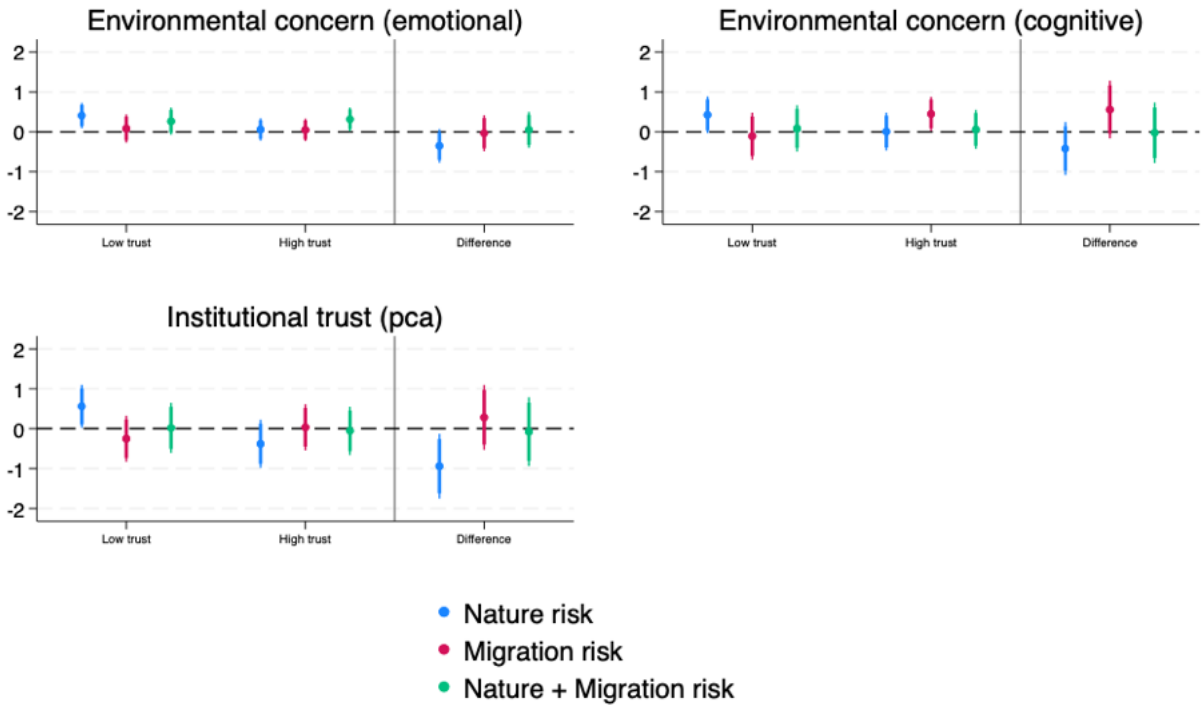
Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with reported social media use above/below the sample median.

Figure A7. Impact of the treatments on attitudes towards cc, immigration and redistribution by social media use.



Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with reported social media use above/below the sample median.

Figure A8. Impact of the treatments on environmental concern and institutional trust by social trust.



Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with social trust above/below the sample median.

Table A5. Regression results for Figure 5: "Hormonal response to the treatments".

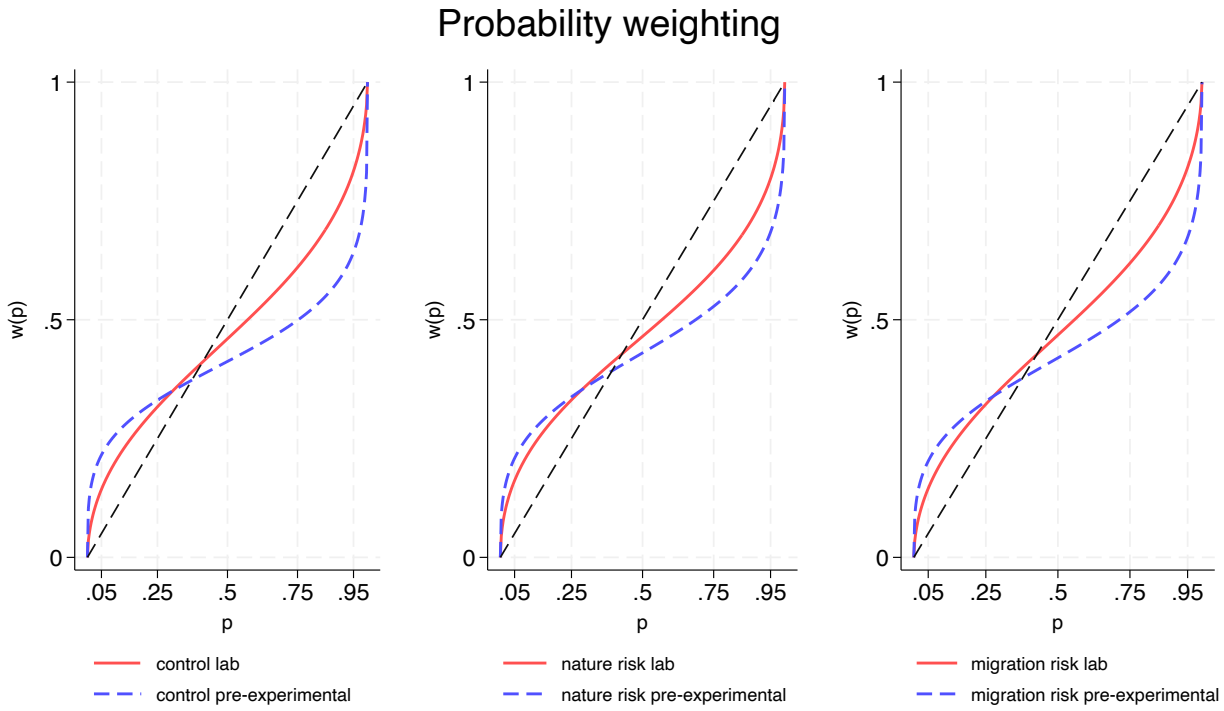
	(1)
VARIABLES	T/C Ratio
Post	0.0516***
	(0.00690)
Nature risk*Post	-0.0204**
	(0.00846)
Migration risk*Post	0.000674
	(0.0102)
Constant	-0.0224***
	(0.00188)
Observations	730
Number of id	366
R-squared	0.223

Standard errors are clustered at the session level. *** p<0.01, ** p<0.05, * p<0.1

As it is possible to observe in Figure A9, for all three groups (exposed to control vs 'nature risk' or 'migration risk') the curve in the lab looks "flatter" (closer to the 45-degree line) than the pre-experimental measure, signaling higher sensitivity to intermediate probabilities in the lab.

This change is, however, smaller for the 'nature risk' group meaning that this kind of information has a positive impact on probability distortion.

Figure A9. Probability weighting functions in pre-experimental survey versus lab for each treatment group.



Notes: Figure shows estimated probability weighting functions by treatment status in the pre-experimental survey and in the lab.

Table A6. Regression results for Figure 6: "Impact of treatments on PWF parameters".

VARIABLES	(1) gamma	(2) delta	(3) noise
Nature risk	0.0424	0.0500	-0.0267***
	(0.0272)	(0.0506)	(0.00868)
Migration risk	0.0487	0.0263	-0.0144
	(0.0302)	(0.0516)	(0.0103)
Lab	0.229***	0.147***	-0.0545***
	(0.0273)	(0.0526)	(0.00970)
Nature risk*Lab	-0.0763**	-0.0147	0.00228
	(0.0372)	(0.0753)	(0.0127)
Migration risk*Lab	-0.0207	0.00528	-0.00379
	(0.0379)	(0.0733)	(0.0141)
Age	-0.00344*	-0.00498	0.00131**
	(0.00197)	(0.00343)	(0.000613)
Female	-0.105***	-0.0739**	0.0170**
	(0.0226)	(0.0366)	(0.00680)
Numeracy	0.0868***	0.0553	-0.0384***
	(0.0212)	(0.0364)	(0.00659)
Constant	0.427***	0.848***	0.226***
	(0.0551)	(0.0929)	(0.0191)
Observations	8,723	8,723	8,723

Notes: Regression results consider lotteries asked in the pre-experimental survey and in the lab. Standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Table A7a. Regression results for Figure 7: "Treatments impact on CDG and CRSD game" Random Effect model.

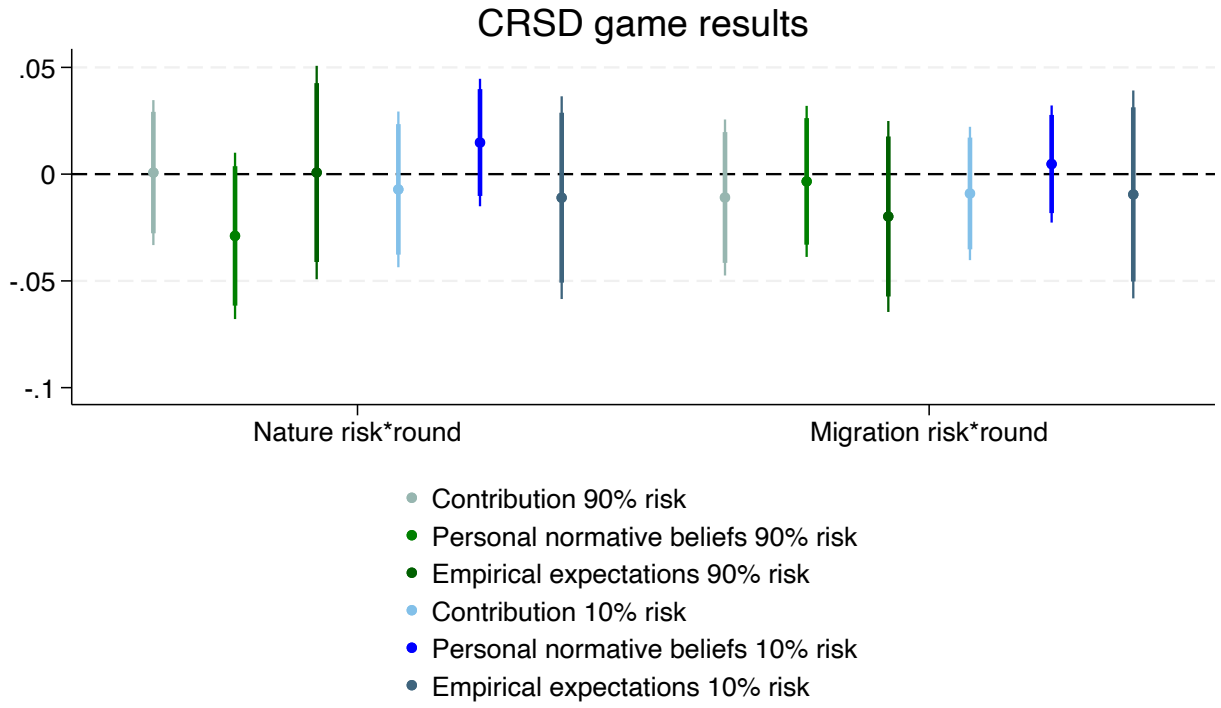
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				90% risk		10% risk	
VARIABLES	Donation to Greenpeace	Contribution	Personal normative beliefs	Empirical expectations	Contribution	Personal normative beliefs	Empirical expectations
Nature risk	0.243**	0.0971	0.295**	0.0777	-0.143	-0.132	-0.0394
	(0.109)	(0.108)	(0.143)	(0.122)	(0.102)	(0.111)	(0.149)
Migration risk	0.140	-0.0523	0.235*	0.0355	-0.114	-0.104	-0.0537
	(0.116)	(0.115)	(0.136)	(0.117)	(0.112)	(0.127)	(0.152)
Age	0.0173	-0.00536	-0.0118*	0.00805	0.0125	0.000290	0.00155
	(0.0133)	(0.00902)	(0.00700)	(0.00516)	(0.0106)	(0.00942)	(0.0119)
Female	0.202*	-0.0316	0.143	0.0896	0.0206	0.0407	0.0976
	(0.101)	(0.111)	(0.119)	(0.102)	(0.0888)	(0.0999)	(0.125)
Lagged payoff		-0.0459***	-0.0163***	0.0262***	-0.0688***	-0.00866*	-0.00880*
		(0.00756)	(0.00484)	(0.00803)	(0.00818)	(0.00517)	(0.00451)
Constant	-1.584**	0.491*	0.306	-0.256	0.488	0.587**	-0.122
	(0.649)	(0.255)	(0.242)	(0.235)	(0.339)	(0.279)	(0.399)
Environmental variables	Y	N	N	N	N	N	N
Round FE	N	Y	Y	Y	Y	Y	Y
Game Instructions	N	Y	Y	Y	Y	Y	Y
Model		RE	RE	RE	RE	RE	RE
Observations	373	1,647	1,647	1,647	1,710	1,710	1,710
R-squared	0.053						
Number of id		183	183	183	190	190	190

Standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Table A7b. Romano-Wolf corrections for Figure 7: "Treatments impact on CDG and CRSD game" Random Effect model.

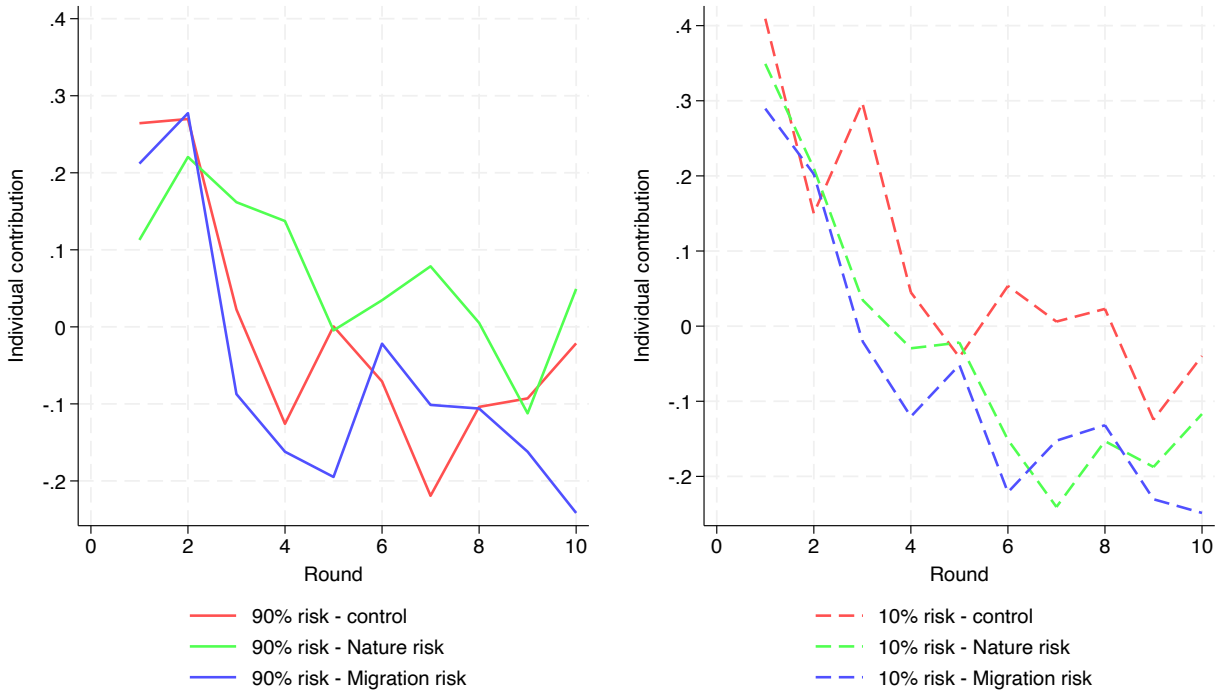
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				90% risk		10% risk	
VARIABLES	Donation to Greenpeace	Contribution	Personal normative beliefs	Empirical expectations	Contribution	Personal normative beliefs	Empirical expectations
Nature risk	**0.243**	**0.0971**	**0.295**	**0.0777**	**-0.143**	**-0.132**	**-0.0394**
p-value	*0.0358*	*0.3699*	*0.0383*	*0.5249*	*0.1601*	*0.7916*	*0.2355*
Rwolf p-value	*0.0180*	*0.1497*	*0.0180*	*0.2236*	*0.0858*	*0.4491*	*0.1497*
Migration risk	**0.140**	**-0.0523**	**0.235**	**0.0355**	**-0.114**	**-0.104**	**-0.0537**
p-value	*0.2392*	*0.6494*	*0.0847*	*0.7617*	*0.3080*	*0.7241*	*0.4143*
Rwolf p-value	*0.1497*	*0.4012*	*0.0359*	*0.4491*	*0.1497*	*0.4012*	*0.1497*
Model		RE	RE	RE	RE	RE	RE
Observations	3,730	1,647	1,647	1,647	1,710	1,710	1,710
Number of id		183	183	183	190	190	190

Figure A10. Treatments impact on CRSD game.



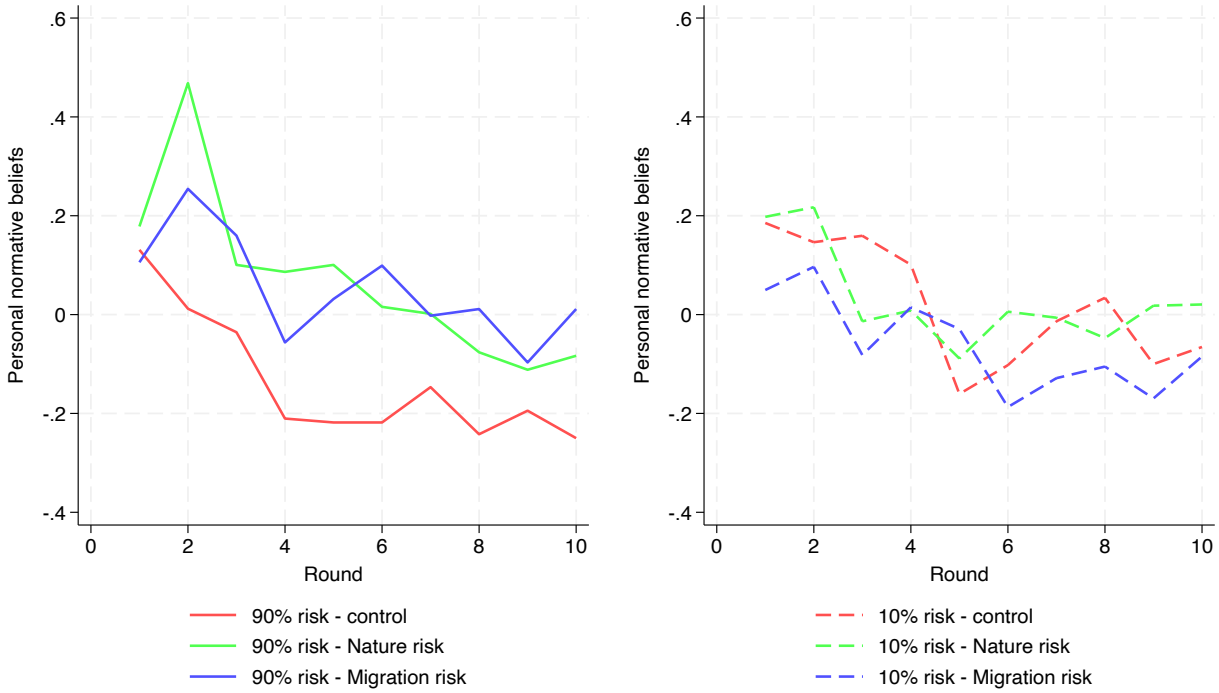
Notes: CRSD game models are fixed effect models controlling for previous round payoff. Outcome variables are standardized. Standard errors are clustered at the individual level.

Figure A11. Contributions in the CRSD game by treatment status.



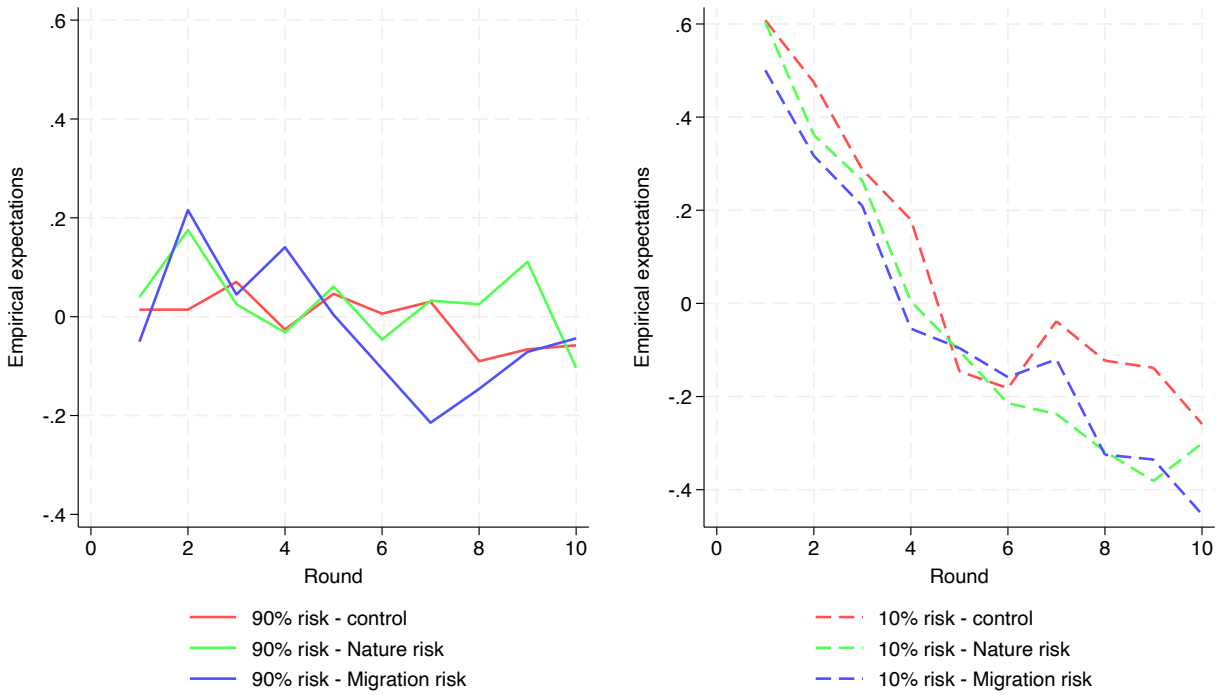
Notes: Figure shows the standardized average contribution by round and treatment status.

Figure A12. Personal normative beliefs in the CRSD game by treatment status.



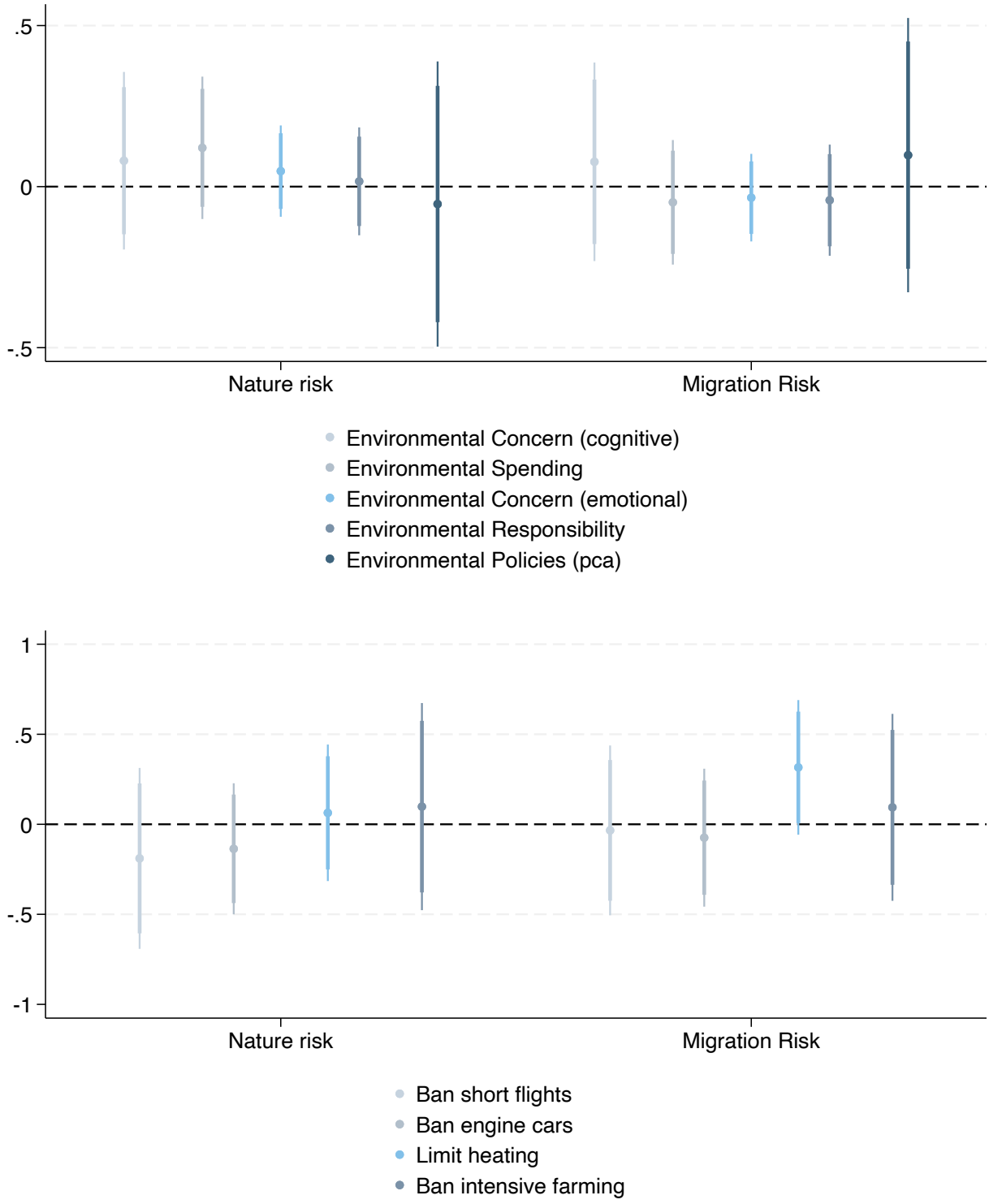
Notes: Figure shows the standardized average personal normative beliefs by round and treatment status.

Figure A13. Empirical expectations in the CRSD game by treatment status.



Notes: Figure shows the standardized average empirical expectation by round and treatment status.

Figure A14. Impact of information podcasts on environmental attitudes and support for environmental policies.



Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game, and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Outcome variables are standardized. Standard errors are clustered at the session level.

Table A8a. Regression results for Figure 8: "Treatments impact on CDG and CRSD game by institutional trust".

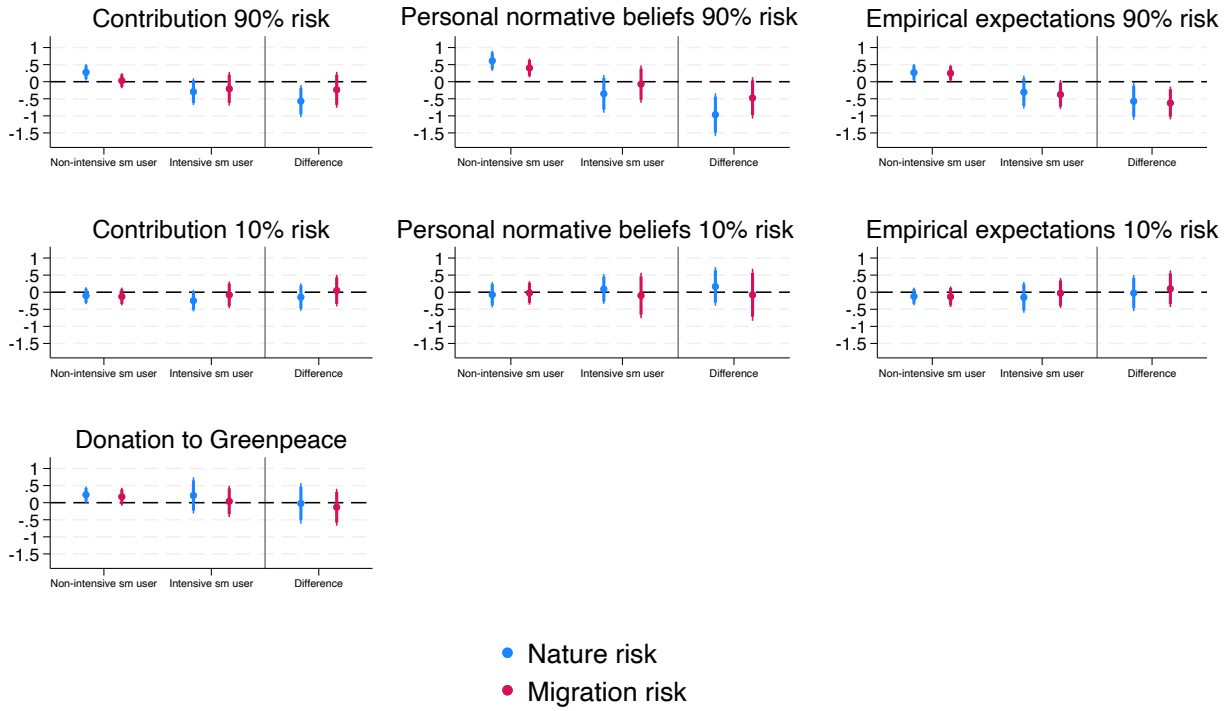
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				90% risk		10% risk	
VARIABLES	Donations to Greenpeace	Contribution	Personal normative beliefs	Empirical expectations	Contribution	Personal normative beliefs	Empirical expectations
Round number		-0.0361**	-0.0370*	-0.0492**	-0.0264*	-0.0366**	-0.0800***
		(0.0164)	(0.0211)	(0.0215)	(0.0152)	(0.0149)	(0.0213)
Nature risk*Round number		0.0290	-0.0189	0.0199	-0.0209	0.0281	-0.0276
		(0.0293)	(0.0318)	(0.0380)	(0.0255)	(0.0223)	(0.0313)
Migration risk*Round number		0.0269	-0.00610	0.0307	-0.00930	0.0183	-0.0115
		(0.0265)	(0.0274)	(0.0318)	(0.0200)	(0.0226)	(0.0414)
High trust*Round number		0.0158	0.0237	0.0719**	-0.0117	0.0207	0.00474
		(0.0202)	(0.0259)	(0.0310)	(0.0220)	(0.0204)	(0.0337)
Nature risk*High trust*Round number		-0.0608*	-0.0270	-0.0497	0.0206	-0.0281	0.0413
		(0.0350)	(0.0402)	(0.0492)	(0.0356)	(0.0297)	(0.0483)
Migration risk*High trust*Round number		-0.0625*	0.00411	-0.0952**	0.000989	-0.0264	-0.00162
		(0.0360)	(0.0361)	(0.0445)	(0.0307)	(0.0289)	(0.0525)
Lagged payoff		-0.0440***	-0.0150***	0.0234***	-0.00755	-0.00395	-0.00494
		(0.00735)	(0.00482)	(0.00799)	(0.00576)	(0.00455)	(0.00541)
Nature risk	0.171						
	(0.174)						
Migration risk	-0.189						
	(0.164)						
High trust	-0.0245						
	(0.125)						
Nature risk*High trust	0.157						
	(0.211)						
Migration risk*High trust	0.605***						
	(0.187)						
Constant	-1.529**	0.386***	0.291***	0.00544	0.275***	0.150***	0.493***
	(0.643)	(0.0663)	(0.0597)	(0.0792)	(0.0740)	(0.0547)	(0.0745)
Socio-Demographic controls	Y	N	N	N	N	N	N
Environmental attitudes controls	Y	N	N	N	N	N	N
Model		FE	FE	FE	FE	FE	FE
Observations	373	1,647	1,647	1,647	1,710	1,710	1,710
R-squared	0.080	0.053	0.045	0.024	0.033	0.017	0.098
Number of id		183	183	183	190	190	190

Notes: High trust respondents are those with levels of institutional trust above the sample median. Standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Table A8b. Romano-Wolf corrections for Figure 8: "Treatments impact on CDG and CRSD game by institutional trust".

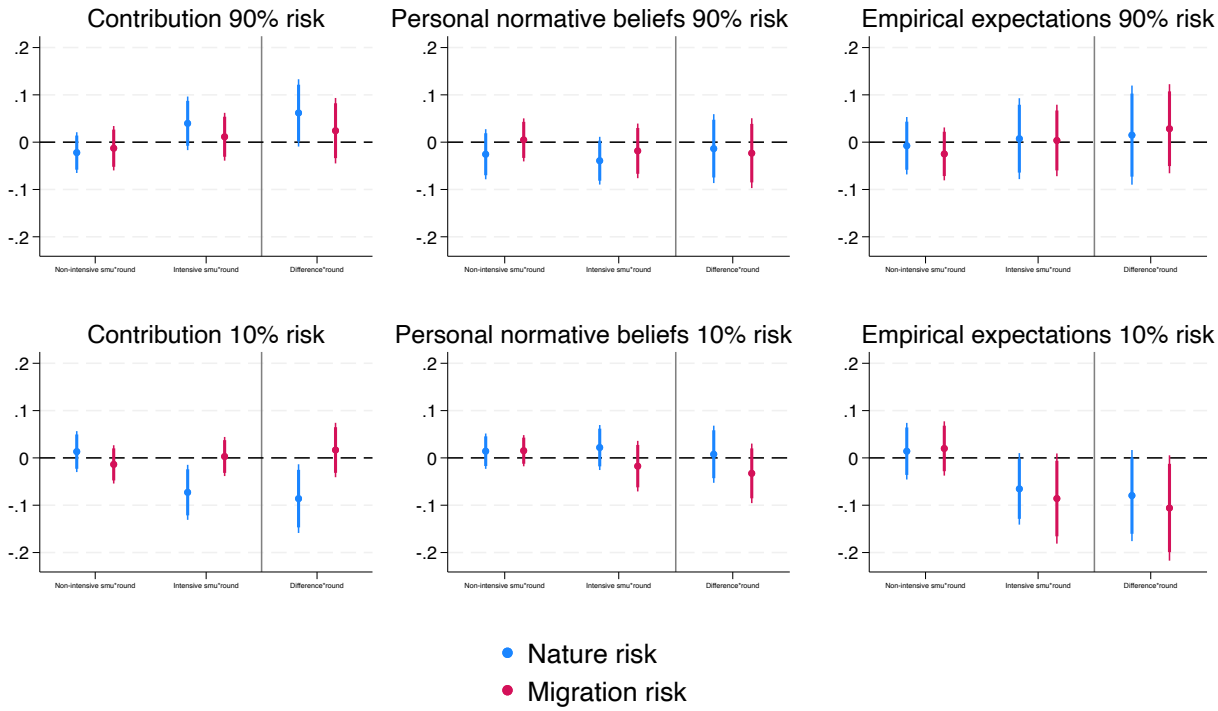
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				90% risk		10% risk	
VARIABLES	Donations to Greenpeace	Contribution	Personal normative beliefs	Empirical expectations	Contribution	Personal normative beliefs	Empirical expectations
Nature risk*Round number		**0.0290**	**-0.0189**	**0.0199**	**-0.0209**	**0.0281**	**-0.0276**
p-value		*0.3226*	*0.5529*	*0.6002*	*0.4133*	*0.2090*	*0.3779*
Rwolf p-value		*0.9102*	*0.9721*	*0.9721*	*0.9182*	*0.7126*	*0.9102*
Migration risk*Round number		**0.0269**	**-0.00610**	**0.0307**	**-0.00930**	**0.0183**	**-0.0115**
p-value		*0.3112*	*0.8243*	*0.3354*	*0.6422*	*0.4200*	*0.7821*
Rwolf p-value		*0.9082*	*0.9940*	*0.9102*	*0.9721*	*0.9242*	*0.9900*
Nature risk*High trust*Round number		**-0.0608**	**-0.0270**	**-0.0497**	**0.0206**	**-0.0281**	**0.0413**
p-value		*0.0838*	*0.5023*	*0.3133*	*0.5637*	*0.3450*	*0.3931*
Rwolf p-value		*0.2116*	*0.9521*	*0.9082*	*0.9721*	*0.9102*	*0.9102*
Migration risk*High trust*Round number		**-0.0625**	**0.00411**	**-0.0952**	**0.000989**	**-0.0264**	**-0.00162**
p-value		*0.0841*	*0.9095*	*0.0337*	*0.9743*	*0.3614*	*0.9754*
Rwolf p-value		*0.2116*	*1.0000*	*0.0559*	*1.0000*	*0.9102*	*1.0000*
Nature risk	**0.171**						
p-value	*0.3382*						
Rwolf p-value	*0.9102*						
Migration risk	**-0.189**						
p-value	*0.2616*						
Rwolf p-value	*0.8104*						
Nature risk*High trust	**0.157**						
p-value	*0.4641*						
Rwolf p-value	*0.9521*						
Migration risk*High trust	**0.605**						
p-value	0.0037						
Rwolf p-value	0.0040						
Model		FE	FE	FE	FE	FE	FE
Observations	373	1,647	1,647	1,647	1,710	1,710	1,710
Number of id		183	183	183	190	190	190

Figure A15. Treatments impact on CDG and CRSD game by social media use.



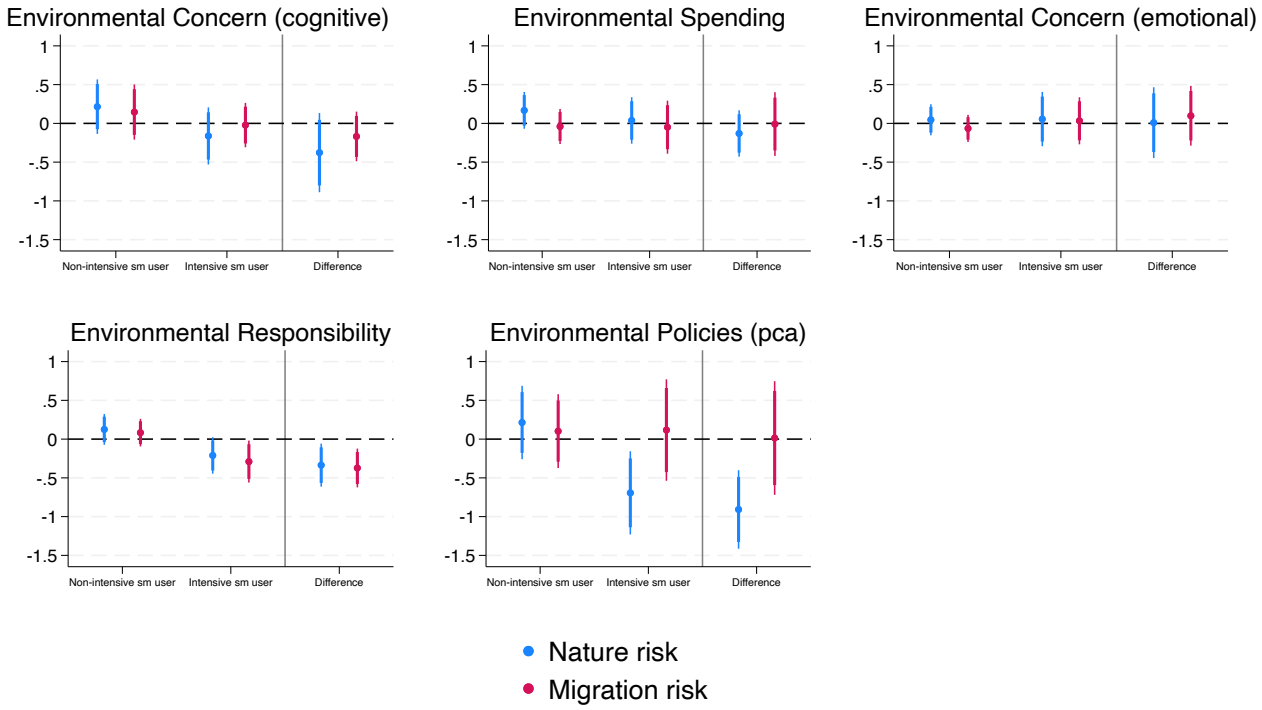
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Intensive (non-intensive) social media users are those that use social media more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

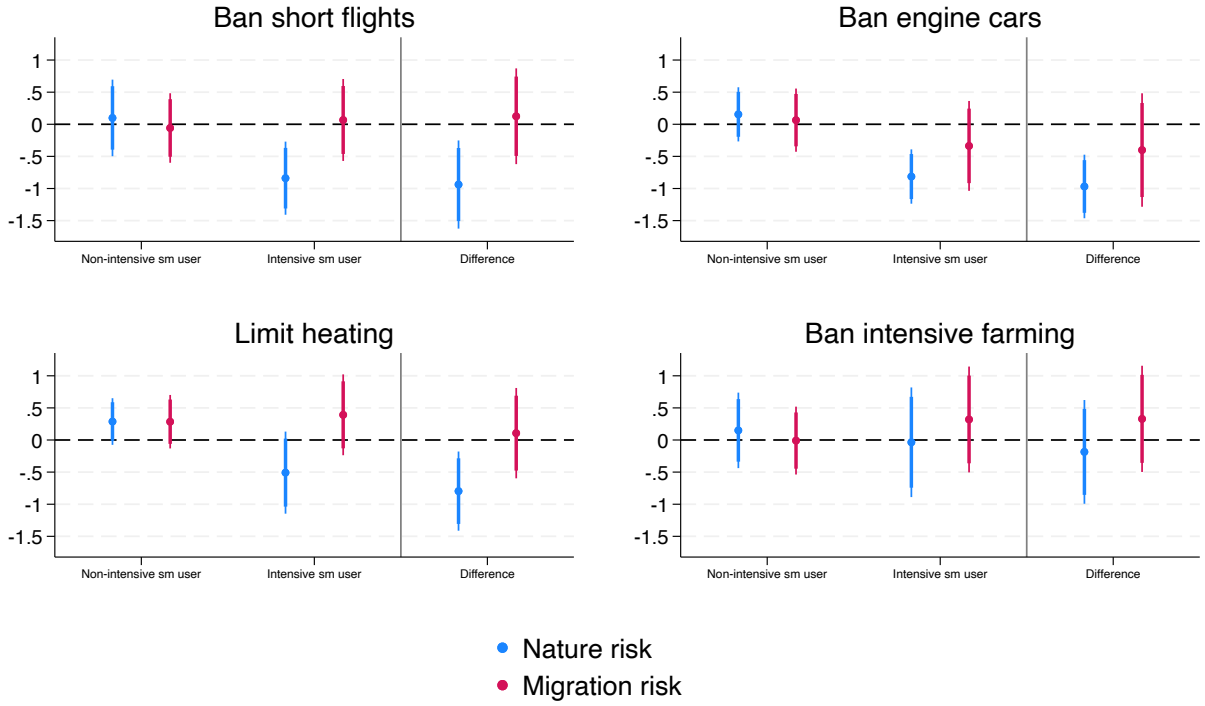
Figure A16. Treatments impact on CRSD game by social media use.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Intensive (non-intensive) social media users are those that use social media more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

Figure A17. Impact of information podcasts on environmental attitudes, support for environmental policies by social media use.





Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Intensive (non-intensive) social media users are those that use social media more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Table A9. Differences between Intensive (I) and Non-Intensive (NI) SMU in Study 1.

	N. of respondents per-group		Mean		Diff	St Err	t-test	p value
	NI SMU	I SMU	NI SMU	I SMU				
Female	455	120	.449	.442	.007	.051	**.15**	**.896**
Voted Rightwing	398	103	.339	.272	.068	.052	**1.3**	**.194**
Bachelor degree	456	120	.461	.491	-.031	.052	**-.6**	**.544**
Institutional trust (pca)	456	119	-.03	.115	-.145	.201	**-.7**	**.47**
Social trust (pca)	456	120	-.03	.099	-.128	.151	**-.85**	**.399**
Risk aversion	456	119	.022	-.062	.085	.103	**.85**	**.409**
Ambiguity aversion	455	120	.076	-.281	.357	.102	**3.5**	**.001**
Environmental concern (emotional)	456	120	-.028	.003	-.031	.103	**-.3**	**.764**
Environmental concern (cognitive)	456	120	.028	-.306	.335	.166	**2**	**.044**
Environmental knowledge	456	120	-.009	-.014	.005	.104	**.05**	**.964**
Environmental responsibility	456	120	-.013	-.062	.05	.101	**.5**	**.62**
Environmental spending	456	120	.018	-.076	.095	.102	**.95**	**.354**
Immigration prejudice	456	119	.085	-.291	.375	.22	**1.7**	**.088**
Redistribution attitudes	456	120	-.13	.477	-.607	.176	**-3.45**	**.001**

Table A10. Differences between Intensive (I) and Non-Intensive (NI) SMU in Study 2.

	N. of respondents per-group		Mean		Diff	St Err	t-test	p value
	NI SMU	I SMU	NI SMU	I SMU				
Female	301	139	.677	.654	.023	.049	**.5**	**.633**
Voted Rightwing	245	108	.053	.028	.026	.024	**1.05**	**.294**
Institutional trust (pca)	301	139	.184	-.399	.583	.184	**3.15**	**.002**
Social trust (pca)	301	139	.049	-.105	.153	.142	**1.1**	**.28**
Risk aversion	297	134	.044	-.098	.142	.147	**.95**	**.338**
Environmental concern (emotional)	301	139	-.063	.136	-.199	.102	**-1.95**	**.052**
Environmental concern (cognitive)	301	139	-.071	.152	-.223	.117	**-1.9**	**.058**
Environmental knowledge	301	139	.041	-.089	.131	.103	**1.25**	**.204**
Environmental responsibility	301	139	.02	-.043	.062	.103	**.6**	**.542**
Environmental spending	301	139	-.057	.123	-.18	.103	**-1.75**	**.078**
Immigration prejudice	301	139	.1	-.215	.315	.186	**1.7**	**.092**

Table A11. Standard Deviation of Personal Normative Beliefs, Study 2.

VARIABLES	(1) St.D. of Personal Normative Beliefs
Nature risk	-0.246
	(0.263)
Migration risk	-0.111
	(0.279)
Low risk	1.135**
	(0.447)
Nature risk*Low risk	-0.0328
	(0.579)
Migration risk*Low risk	-0.122
	(0.602)
Round Number	-0.0820***
	(0.0253)
Nature risk*Round Number	0.00395
	(0.0394)
Migration risk*Round Number	0.00406
	(0.0306)
Low risk*Round Number	0.136***
	(0.0430)
Nature risk*Low Risk*Round Number	-0.0255
	(0.0718)
Migration risk*Low Risk*Round Number	0.00108
	(0.0616)
Constant	1.797***
	(0.251)
Observations	480
R-squared	0.556

Standard errors are clustered at the session level. *** p<0.01, ** p<0.05, * p<0.1

In order to measure the strength of social norms, we checked the standard deviation of personal normative beliefs by calculating the standard deviation by session, round and risk treatment group. Results are shown in Table A11. It is possible to observe that in the low risk CRSD game the standard deviation is higher and it tends to increase over rounds, whereas in

the high risk version of the game it reduces over rounds. This result is consistent with studies such as (Szekely et al., 2021) finding that higher collective risk stimulate social norms. However, there is no variation between groups exposed to different video-podcast.

Participants in Study 2 who guessed the precise study goal are those that indicate that we want to manipulate their donations to Greenpeace, contributions in the CRSD game and their environmental attitudes providing some sort of information. We identify these participants by flagging those that mention "manipulat*" or "raise awarness" in the study goal section, and manually check if these answers explicitly guessed the study goal. Table A12 summarizes the percentages and number of respondents who understood the study goal by treatment status.

Table A12. Participants guessing the precise study goal.

	Control group	'Nature risk'	'Migration risk'	Total
Guessed exact study goal	3 (2.31%)	10 (7.75%)	11 (9.1%)	24 (6.32%)
Not Guessed	127 (97.69%)	119 (92.25%)	110 (90.9%)	356 (93.68%)
Total	130	129	121	380

Notes: Figures consider the same respondents included in CDG and CRSD game analysis.

Figure A18. Replication of Figure 7 excluding participants guessing the study goal.

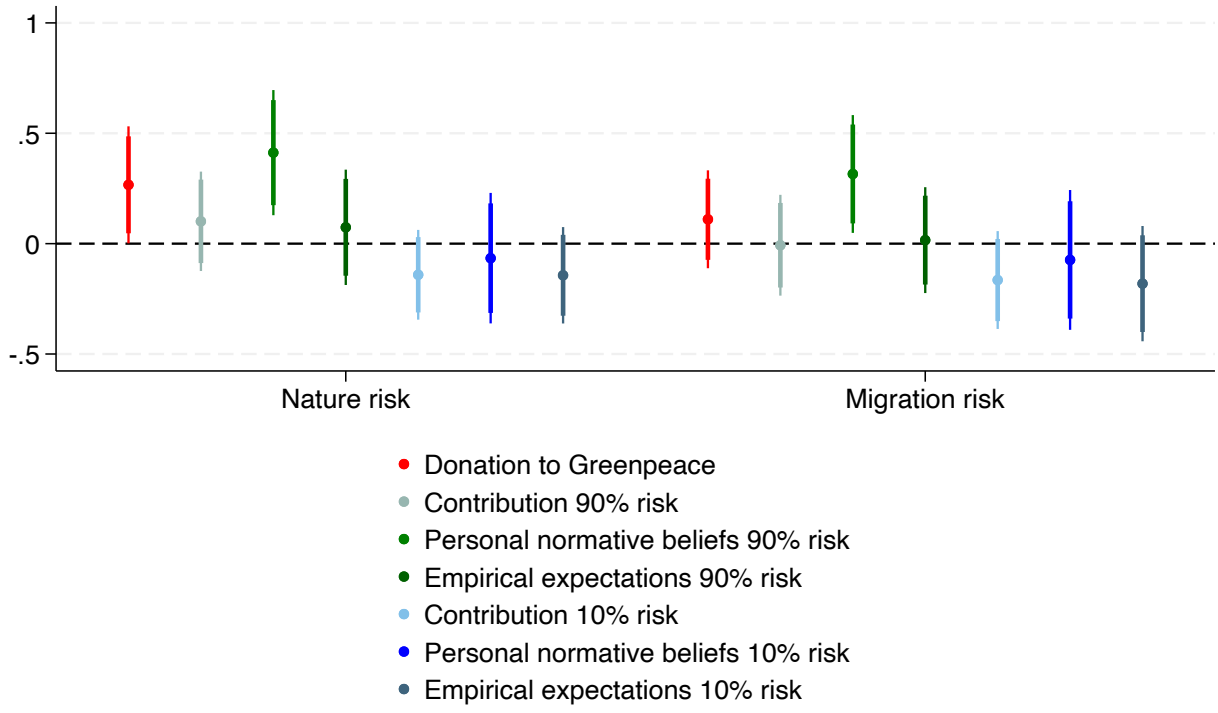


Figure A19. Replication of Figure 8 excluding participants guessing the study goal.

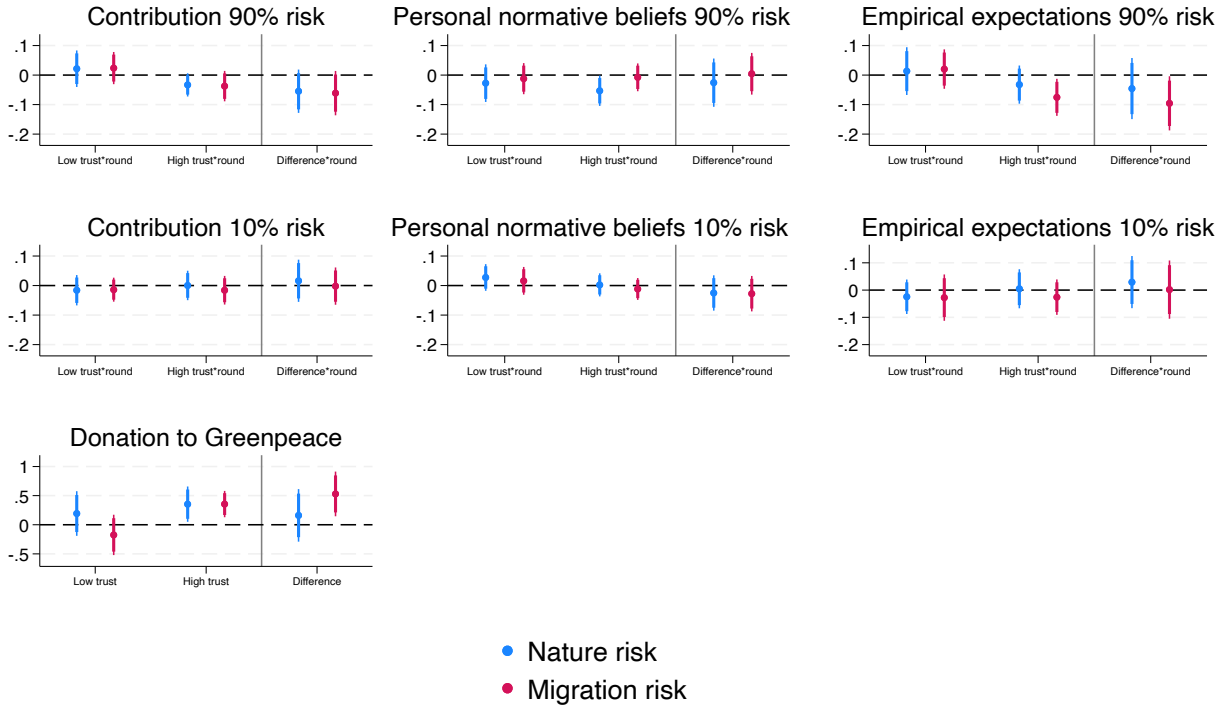


Table A13. Study 1 Variables' Legend.

Variable name	Description
Outcomes	
Contribution	The amount of money (out of the hypothetical 40€ endowment) the respondent contributes in the CRSD game. This measure is not money incentivized.
Personal normative belief	The amount of money the respondent believes that people in their CRSD game group (including themselves) should contribute in the game. This measure is not money incentivized.
Empirical expectation	The amount of money the respondent believes that other people in their CRSD game group are going to contribute on average. This measure is not money incentivized.
Donations to environmental project	How much of the hypothetically collected 120€ from the CRSD game the respondent donates to "Amici della Terra ONLUS" (Earth's friends NGO). This measure is not money incentivized.
Donations to migration project	How much of the hypothetically collected 120€ from the CRSD game the respondent donates to "Associazione Migranti ONLUS" (Migrants' NGO). This measure is not money incentivized.
Environmental concern (emotional)	This variable consists in the answer to the question "How much does climate change worries you?"
Environmental concern (cognitive)	We aggregate through principal component analysis (pca) four answers to questions addressing how severe climate change is for the respondent.
Institutional trust (pca)	We aggregate through pca trust in the Italian Government, politicians, local governments (regions, provinces and municipalities), EU, UN, media and scientists.

Perceived probability of shock	Respondents are asked to guess what the shock probability in the CRSD game was. They are asked a precise guess if they predicted it to be in the 40-59% range.
Aversion to risk	This variable reports participants' degree of risk aversion measured through a single lottery staircase certain equivalent elicitation procedure. It is not money incentivized.
Aversion to ambiguity	This variable reports the answer to an Ellsberg urn bet choice. It is not money incentivized.
Environmental Knowledge	It captures the extent respondents believe in the anthropogenic nature of climate change.
Environmental Responsibility	It captures the feeling that fighting climate change is a personal responsibility.
Environmental Spending	It identifies support for higher public spending for the environment.
Attitudes towards migrants (pca)	We aggregate through pca answers to four questions on the general attitudes towards migrants living in Italy.
Pro redistribution (pca)	We aggregate through pca answers to the level of agreement to four public spending items.
Moderators	
Voted rightwing	We consider rightwing respondents those who voted one of the center-right coalition parties (Fratelli d'Italia, Lega, Forza Italia, Noi Moderati), Vita or Italexit in the last elections. Non-rightwing respondents are those to have reported to vote another party or no party. We exclude participants who do not answer to the past voting question.
Social media use	We consider intensive SMU those that report a daily use of social media above the sample median.
Institutional trust (pca)	We consider "high trust" respondents that have a level of institutional trust above the sample median.
Social trust (pca)	For social trust we aggregate through pca answers to three social trust questions. We consider as "high trust" respondents who have a value of social trust above the sample median.
Immigration prejudice (pca)	For immigration prejudice we aggregate through pca answers to a battery of 10 questions capturing prejudiced view of immigrants. We consider as "high prejudice" respondents who have a value of prejudice above the sample median.

Table A14. Study 1 Summary Statistics.

Variable	Frequency	%
Gender		
Male	303	43.72%
Female	389	56.13%
Non-Binary	1	0.14%
Education		
No high school diploma	49	7.07%
High school diploma	320	46.18%
Bachelor	90	12.99%
Master	215	31.02%
PhD	19	2.74%

Party voted in 2022 elections		
Partito Democratico	110	15.87%
Other leftwing party	73	10.53%
Movimento 5 Stelle	106	15.30%
Center	35	5.05%
Fratelli d'Italia	103	14.86%
Other rightwing party	60	8.66%
Null ballot	11	1.59%
Not answered	195	28.14%
Social media use		
<30 mins per day	269	38.82%
30-60 mins per day	187	26.98%
1-2 hours per day	74	10.68%
>2 hours per day	46	6.64%
Not answered	117	16.88%
Treatment		
Active control	218	31.46%
Nature risk	184	26.55%
Migration risk	160	23.09%
Nature + Migration risk	131	18.90%

Variable	Mean (Std. Err.)	Min	Max
Age	46.343 (13.530)	18	82
Social trust (pca)	0.000 (1.473)	-2.367	4.649
Institutional trust (pca)	0.000 (1.945)	-4.431	5.777
Environmental knowledge	3.743 (0.736)	1	5
Immigration prejudice (pca)	0.000 (2.141)	-5.042	5.394

Notes: Other leftwing parties include: Alleanza Verdi e Sinistra Italiana, Italia Sovrana e Popolare, Partito Comunista Italiano, Unione Popolare con De Magistris, +Europa, Potere al Popolo; Center parties include: Azione, Italia Viva, Free, Impegno Civico Luigi di Maio, Centro Democratico, Sudtiroler Volkspartei, Patt; Other rightwing parties include: Lega, Forza Italia, Noi Moderati, Vita, Italexit.

Table A15. Study 2 Variables' Legend.

Variable name	Description	Moment of collection
Outcomes		
T/C ratio	The ratio between Testosterone and Cortisol measured in the participant's saliva sample. Samples are collected before and after watching the video-podcasts.	Lab
PWF Parameters	These measures captures the two parameters of the Probability Weighting Function (PWF). The PWF is estimated using CE elicited using lottery in the loss domain. They are money incentivized in the lab, not incentivized in the pre-experimental survey.	Pre-experimental survey and Lab. Pre-experimental survey: 15 lotteries in the loss domain, with varying loss probabilities (5%, 25%, 50%, 75%, 95%) and varying outcomes, elicited through MPL method. Lab: 5 lotteries in the loss domain, with varying loss probabilities and the same outcomes, elicited through a 3-step staircase procedure.

Donations to Greenpeace	How much of their 15€ endowment the respondent donates to Greenpeace in the CDG. This measure is money incentivized.	Lab
Contribution	The amount of money (out of the 15€ endowment) the respondent contributes in one round of the CRSD game (with a shock probability of either 10% or 90%). This measure is money incentivized.	Lab
Personal normative belief	The amount of money the respondent believes that people in their CRSD game group (including themselves) should contribute in the game per round. This measure is not money incentivized.	Lab
Empirical expectation	The amount of money the respondent believes that other people in their CRSD game group are going to contribute on average in one round. This measure is not money incentivized.	Lab
Environmental concern (cognitive)	We aggregate through principal component analysis (pca) four answers to questions addressing how severe climate change is for the respondent. These questions differ to the ones of Study 1.	Pre-experimental and Lab. The questions used are the same, however the scale and the question statements are reversed in the lab compared to the pre-experimental survey. We use only Lab values as an outcome.
Environmental Spending	It identifies support for higher public spending for the environment.	Pre-experimental and Lab. We use only Lab values as an outcome.
Environmental concern (emotional)	This variable consists in the answer to the question "How much does climate change worries you?"	Pre-experimental and Lab. We use only Lab values as an outcome.
Environmental Responsibility	It captures the feeling that fighting climate change is a personal responsibility.	Pre-experimental and Lab. We use only Lab values as an outcome.
Environmental policies	We aggregate through pca answers to four questions on agreement with four different environmental policies (ban short flights, ban engine cars, limit heating and ban intensive farming).	Lab
Moderators		
Institutional trust (pca)	We aggregate through pca trust in the Italian Government, politicians, local governments (regions, provinces and municipalities), EU, UN, media and scientists. We consider "high trust" respondents that have a level of institutional trust above the sample median.	Pre-experimental
Environmental Knowledge	It captures the extent respondents believe in the anthropogenic nature of	Pre-experimental

	climate change. We consider "high knowledge" respondents that have a level of environmental knowledge above the sample median.	
Environmental Beliefs	We aggregate through pca environmental concern (emotional), environmental responsibility, environmental spending. We consider "high beliefs" respondents that have a level of this pca variable above the sample median.	Pre-experimental and Lab. These variables are collected in both surveys, we construct this pca variable only in the pre-experimental survey.
Environmental concern (cognitive)	We consider "high concern" respondents that have a level of cognitive environmental concern above the sample median.	Pre-experimental and Lab. The questions used are the same, however the scale and the question statement are reversed in the lab compared to the pre-experimental survey. We use only pre-experimental values as a moderator.
Risk aversion	We aggregate through pca the certain equivalent elicited from the three 50% risk lotteries. "High risk averse" respondents are those with a level of risk aversion above the sample median.	Pre-experimental survey and Lab. Pre-experimental survey 15 lotteries in the loss domain, with varying loss probabilies (5%, 25%, 50%, 75%, 95%) and varying outcomes, elicited through MPL method. We use only the three 50% pre-experimental lotteries as moderators.
Time preferences	Measure willingness of the respondent to postpone money income. Collected using a 5-step staircase procedure. This measure is not incentivized.	Pre-experimental survey and Lab. We use only the pre-experimental measure as moderator.
Immigration prejudice (pca)	We aggregate through pca answers to a battery of 9 questions capturing prejudiced view of immigrants. We consider as "high prejudice" respondents who have a value of prejudice above the sample median. These are not the same questions as of Study1.	Pre-experimental
Social media use	We consider intensive SMU those that report a daily use of social media above the sample median.	Pre-experimental

Table A16. Study 2 Summary Statistics.

Variable	Frequency	%
Gender		
Male	136	30.16%
Female	295	65.41%
Non-Binary	6	1.33%
Other	3	0.67%
Degree		
Arts and Humanities	60	13.30%
STEM	31	6.87%

Medicine and Natural Sciences	91	20.18%	
Social Sciences	108	23.95%	
Law and Political Sciences	107	23.73%	
Educational Sciences and Communication	36	7.98%	
Not specified	18	3.99%	
Party voted in 2022 elections			
Partito Democratico	58	12.86%	
Other leftwing party	189	41.91%	
Movimento 5 Stelle	23	5.10%	
Center	49	10.86%	
Fratelli d'Italia	11	2.44%	
Other rightwing party	6	1.33%	
Null ballot	17	3.77%	
Not answered	98	21.73%	
Social media use			
<30 mins per day	128	28.38%	
30-60 mins per day	173	38.36%	
1-2 hours per day	100	22.17%	
>2 hours per day	39	8.65%	
Not answered	11	2.44%	
Information Treatment			
Active control	154	34.15%	
Nature risk	147	32.59%	
Migration risk	150	33.26%	
CRSD Risk Treatment			
90% risk	227	50.33%	
10% risk	223	49.45%	

Variable	**Mean (Std. Err.)**	**Min**	**Max**
Age	24.930 (5.854)	19	70
Social trust (pca)	0.000 (1.382)	-2.990	4.765
Institutional trust (pca)	0.000 (1.814)	-4.973	4.477
Environmental concern (emotional)	3.800 (0.835)	1	5
Environmental concern (cognitive)	0.000 (1.144)	-5.076	1.657
Environmental spending	5.970 (1.345)	1	7
Environmental knowledge	4.039 (0.433)	2	5
Environmental responsibility	4.989 (1.413)	1	7
Immigration prejudice (pca)	0.000 (1.819)	-3.503	7.090

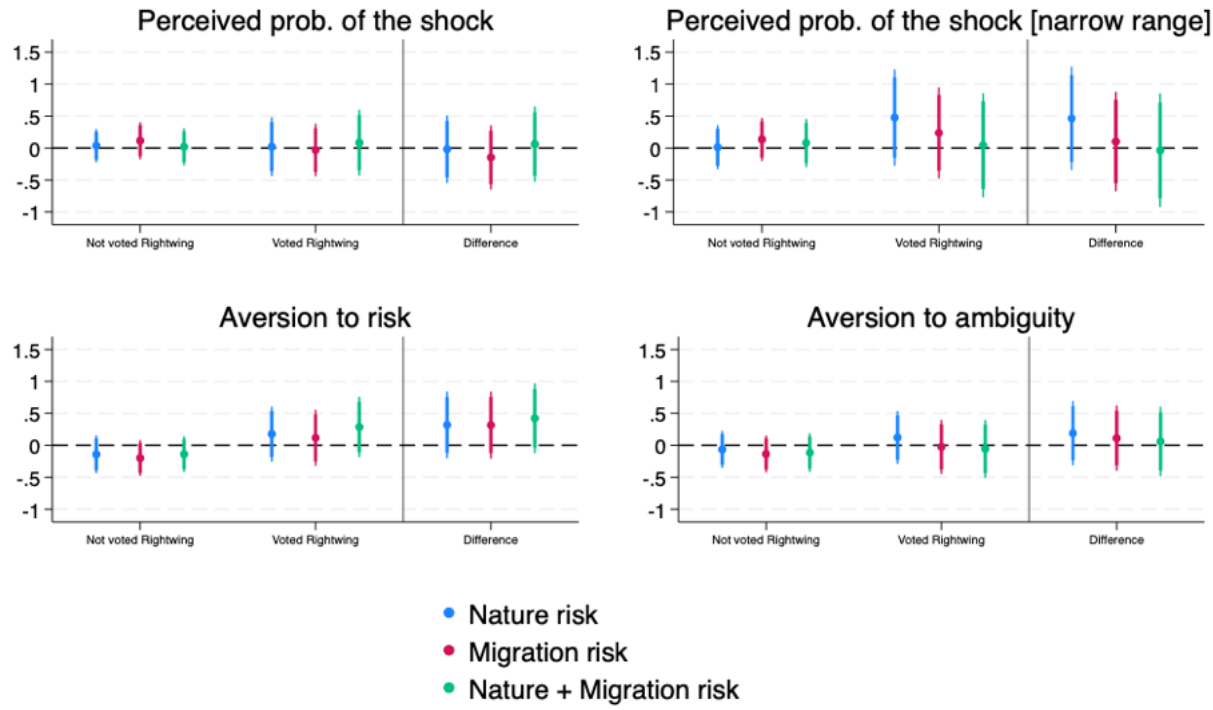
Notes: Variables refers to pre-experimental measures. Social Sciences include: Economics, Psychology and Sociology. Other leftwing parties include: Alleanza Verdi e Sinistra Italiana, Partito Comunista Italiano, Unione Popolare con De Magistris, +Europa, Potere al Popolo, VDA Aperta; Center parties include: Azione, Italia Viva, Free, Impegno Civico Luigi di Maio, Centro Democratico, Partito Animalista, UCDL, 10 Volte Meglio, Sud Chiama Nord; Other rightwing parties include: Lega, Forza Italia, Noi Moderati, Alternativa per l'Italia, No Green Pass.

Section 2

Figures B1 to B14 show treatment effects by subsamples specified in hypothesis H2a, which are not commented in the paper. We test whether there are heterogeneous treatment effects by past voting behavior, social media use, institutional trust, social trust and prejudice against migrants.

Intensive SMU reduce risk aversion after exposure to the complete treatment (Figure B3). Respondents with high levels of institutional trust[1] increase cognitive concern because of climate change induced migration, and emotional concern when exposed to information on both risks (Figure B5). Confirming H2a, respondents with low social trust[2] increase perceived probability of shock in the CRSD game, belief in the anthropogenic nature of climate change and support for environmental spending when exposed to 'nature risk' treatment (Figure B9-10). Finally, participants with high prejudice[3] against immigrants are more likely to increase environmental concern (Figure B12), climate change knowledge and support for climate spending (Figure B14) because of exposure to 'nature risk'. On the other hand, low prejudice respondents reduce aversion to ambiguity whenever are exposed to information on natural disasters in their own country (Figure B13).

Figure B1. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity aversion for rightwing individuals.

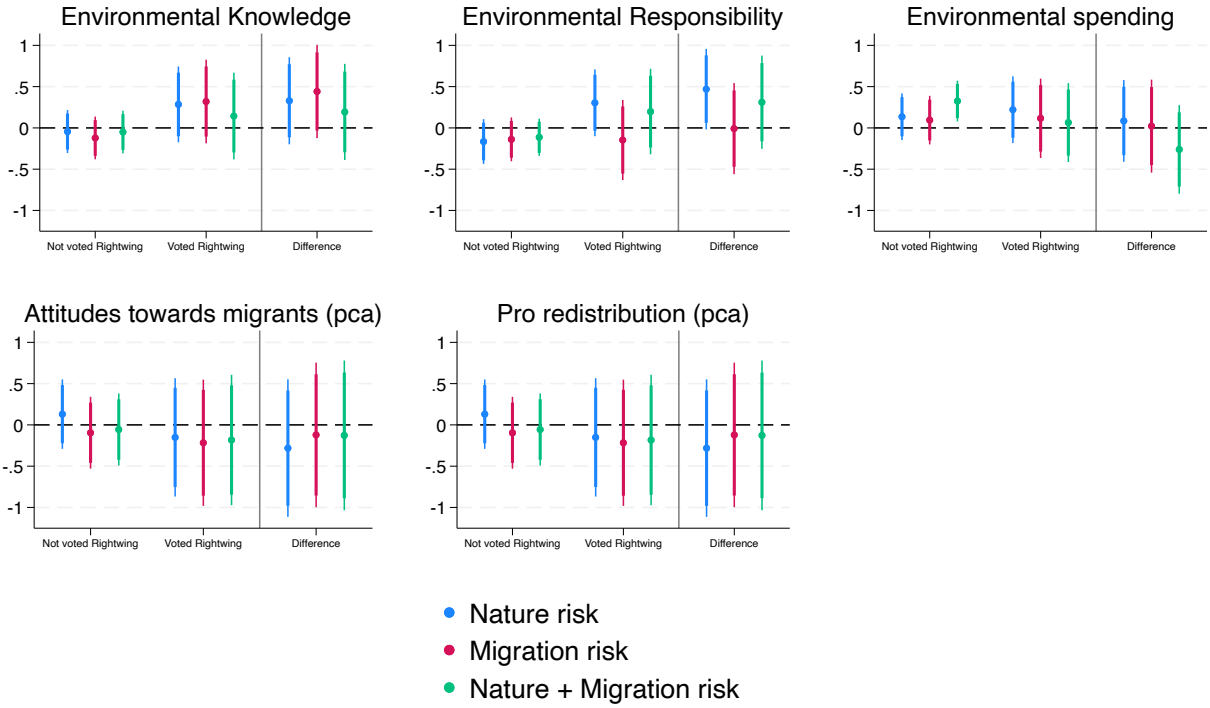


Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and

[1] We identify respondents with high institutional trust as those who have a value of the first component of the principal component analysis (pca), capturing institutional trust, above the sample median.
[2] We measure social trust using the first component derived from pca on three questions capturing social trust.
[3] We measure immigration prejudice through ten questions aimed at capturing manifest prejudice.

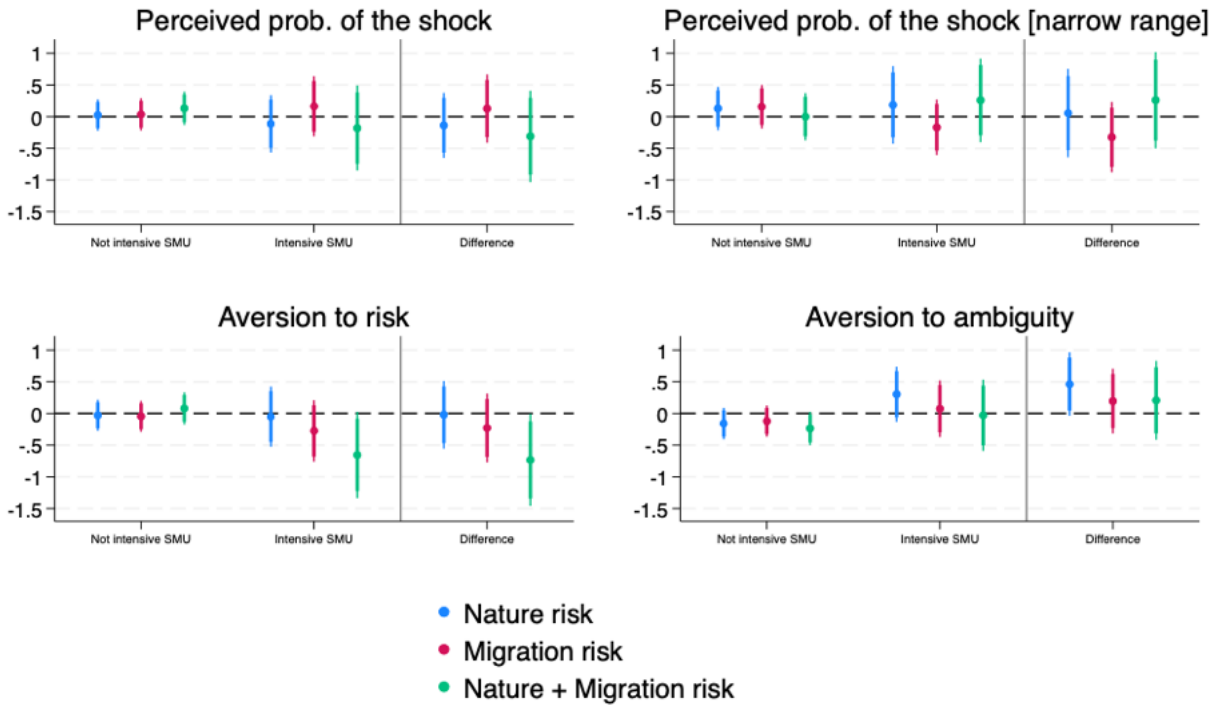
duration of the survey. Outcome variables are standardized. Robust standard errors. Rightwing respondents are those who reported to have voted a rightwing party in the last national elections.

Figure B2. Impact of the treatments on attitudes towards cc, immigration and redistribution for rightwing individuals.



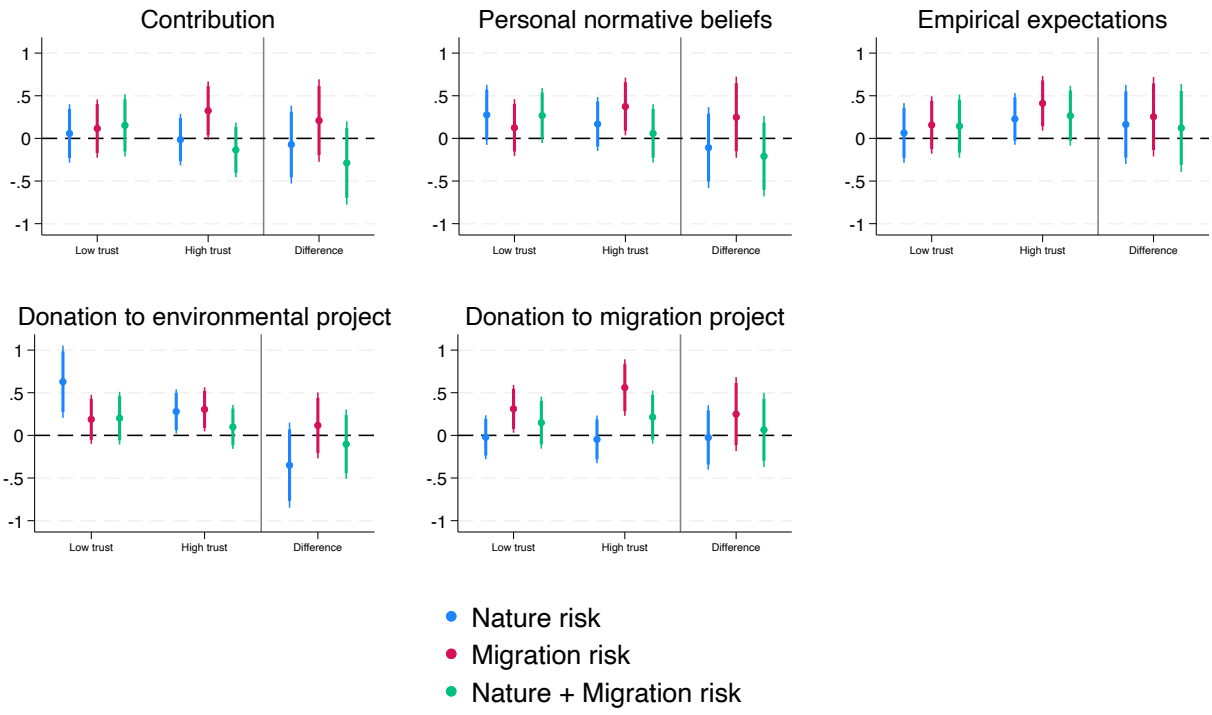
Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. Rightwing respondents are those who reported to have voted a rightwing party in the last national elections.

Figure B3. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity by social media use.



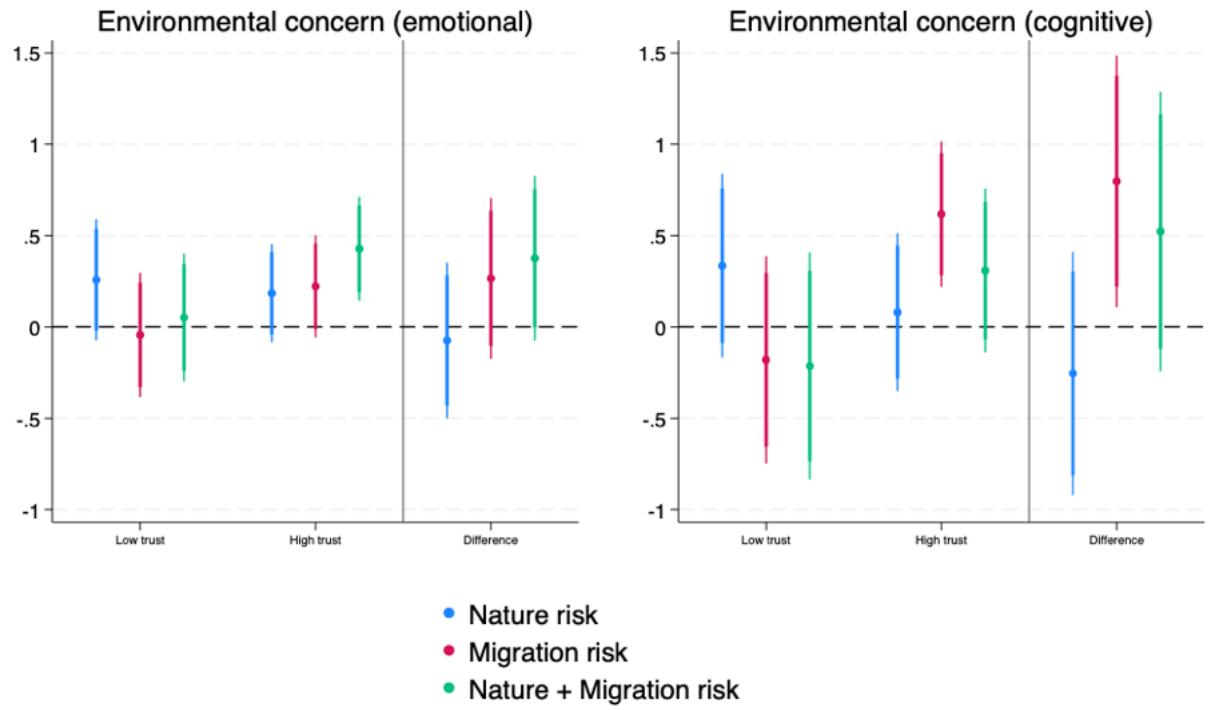
Notes: Figure shows marginal effects of treatment from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with reported social media use above/below the sample median.

Figure B4. Impact of the treatments on contribution, normative beliefs, empirical expectations and donations in the CRSD game by institutional trust.



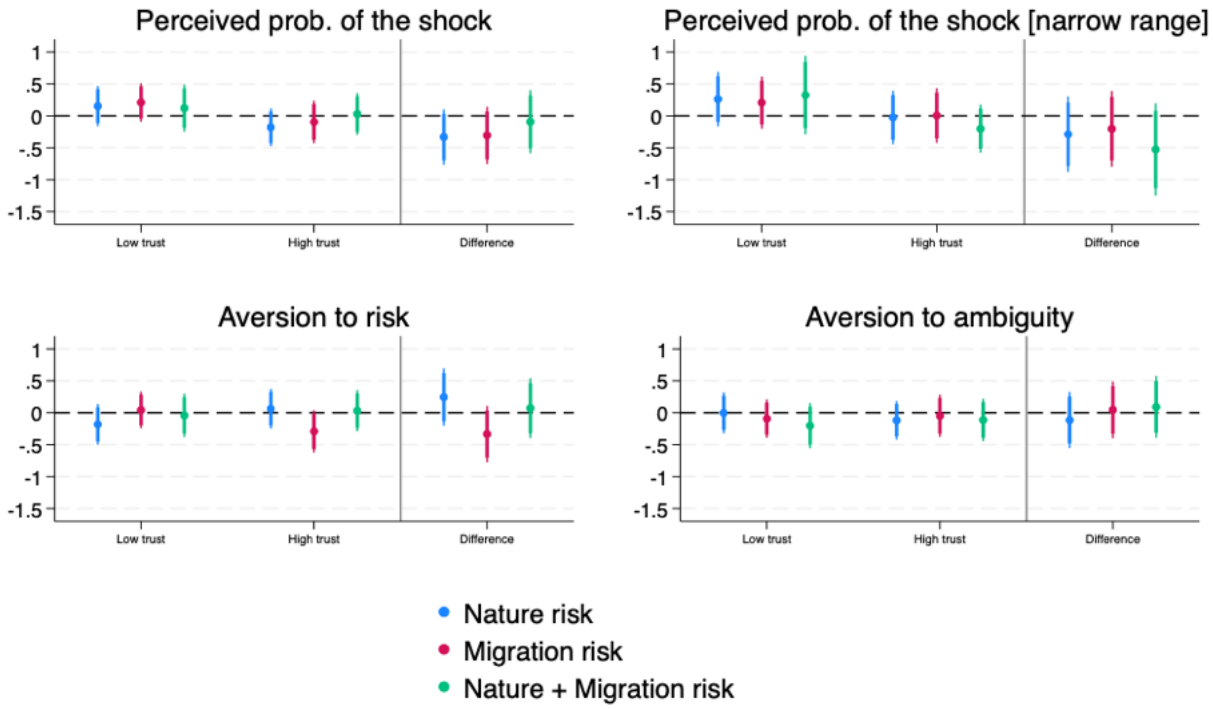
Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with institutional trust above/below the sample median.

Figure B5. Impact of the treatments on environmental concern by institutional trust.



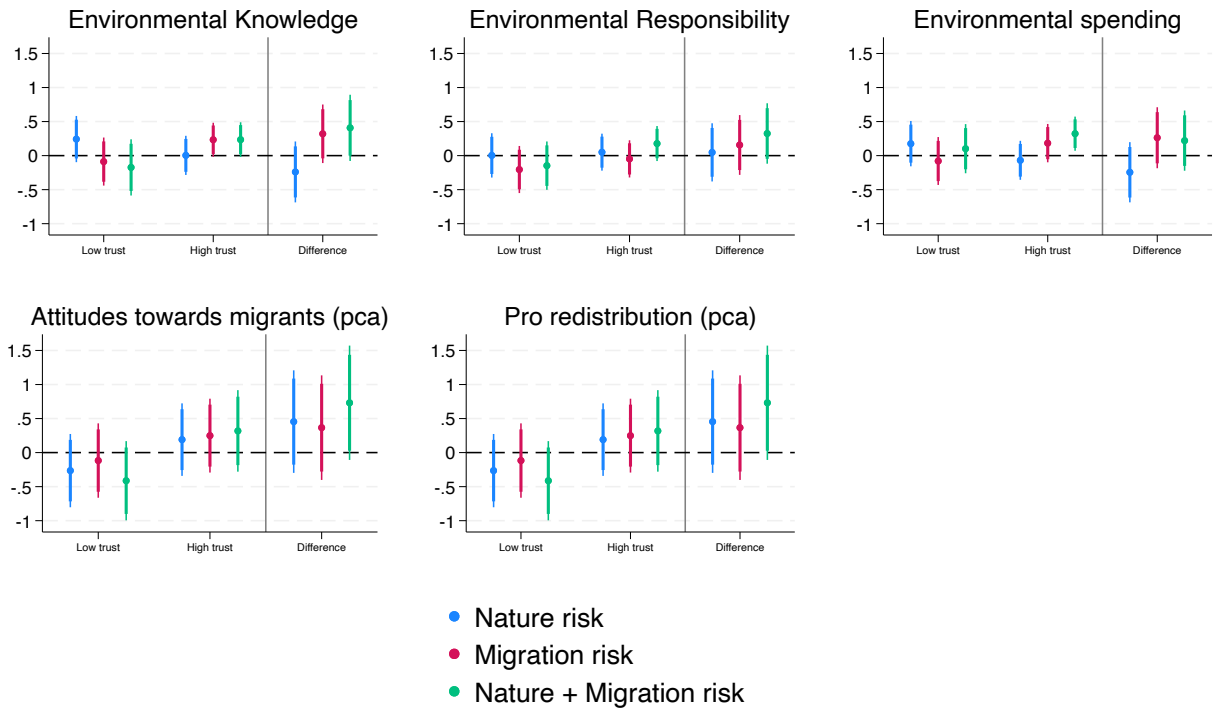
Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with institutional trust above/below the sample median.

Figure B6. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity by institutional trust.



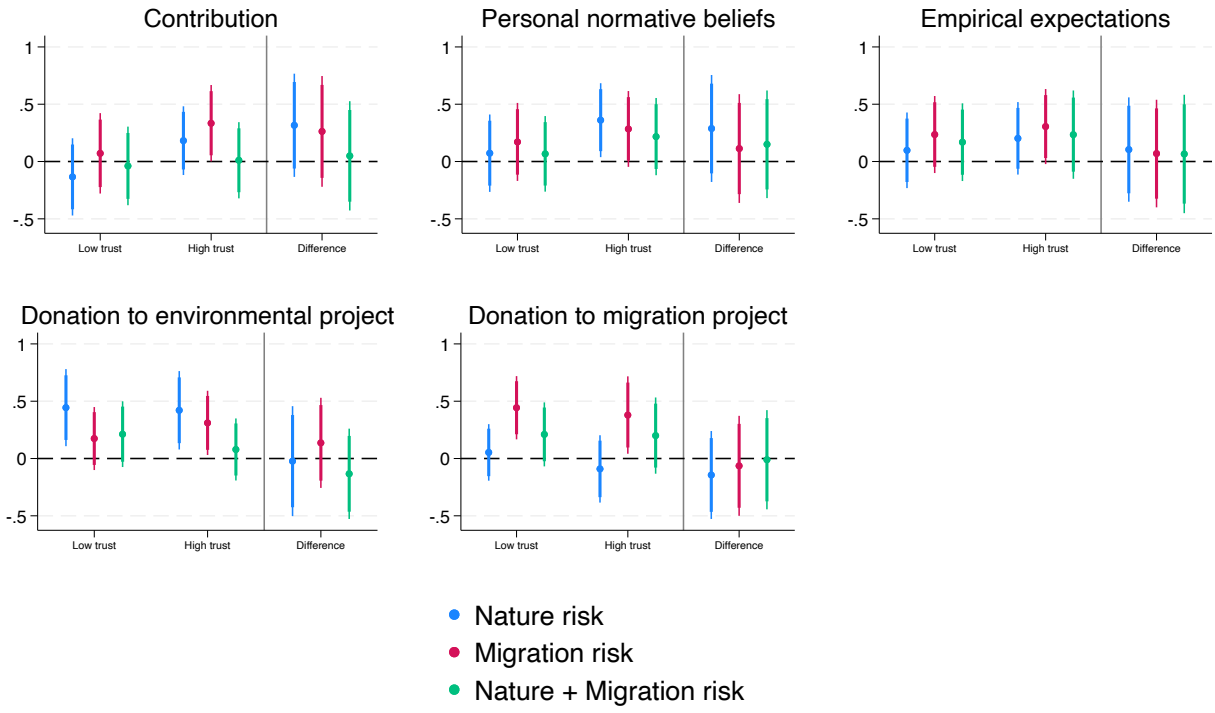
Notes: Figure shows marginal effect of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with institutional trust above/below the sample median.

Figure B7. Impact of the treatments on attitudes towards cc, immigration and redistribution by institutional trust.



Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with institutional trust above/below the sample median.

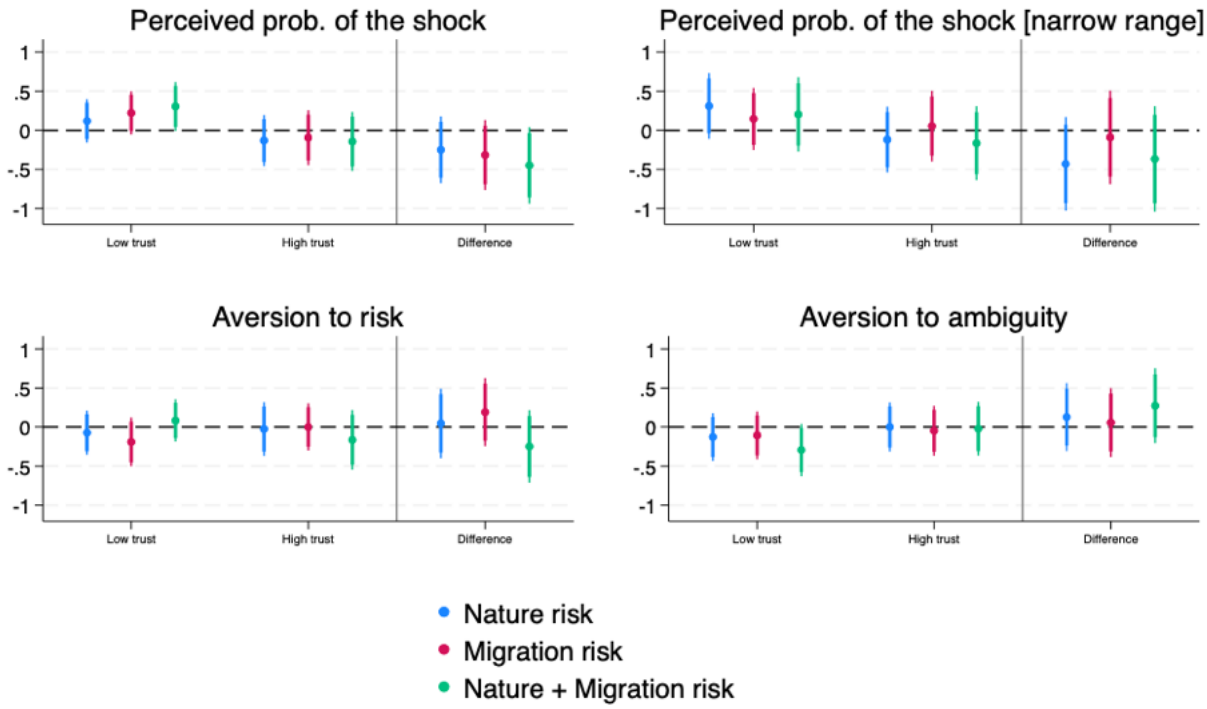
Figure B8. Impact of the treatments on contribution, normative beliefs, empirical expectations and donations in the CRSD game by social trust.



Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education

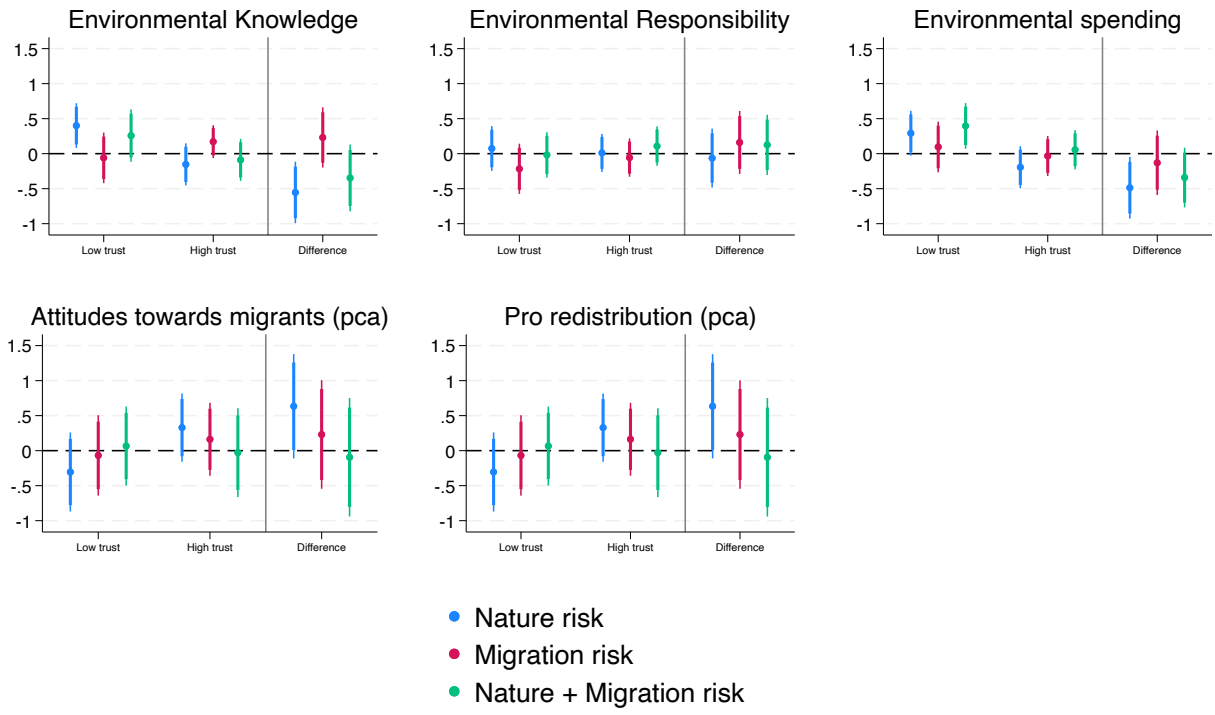
and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with social trust above/below the sample median.

Figure B9. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity by social trust.



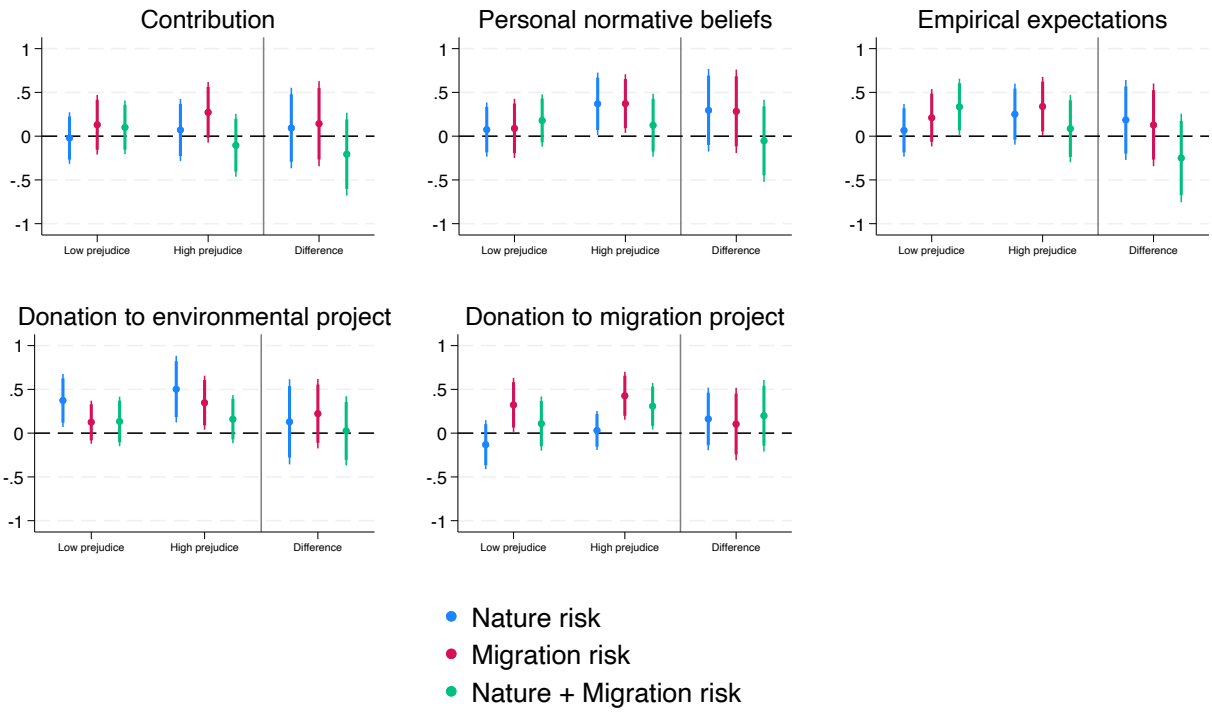
Notes: Figure shows marginal effect of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with social trust above/below the sample median.

Figure B10. Impact of the treatments on attitudes towards cc, immigration and redistribution by social trust.



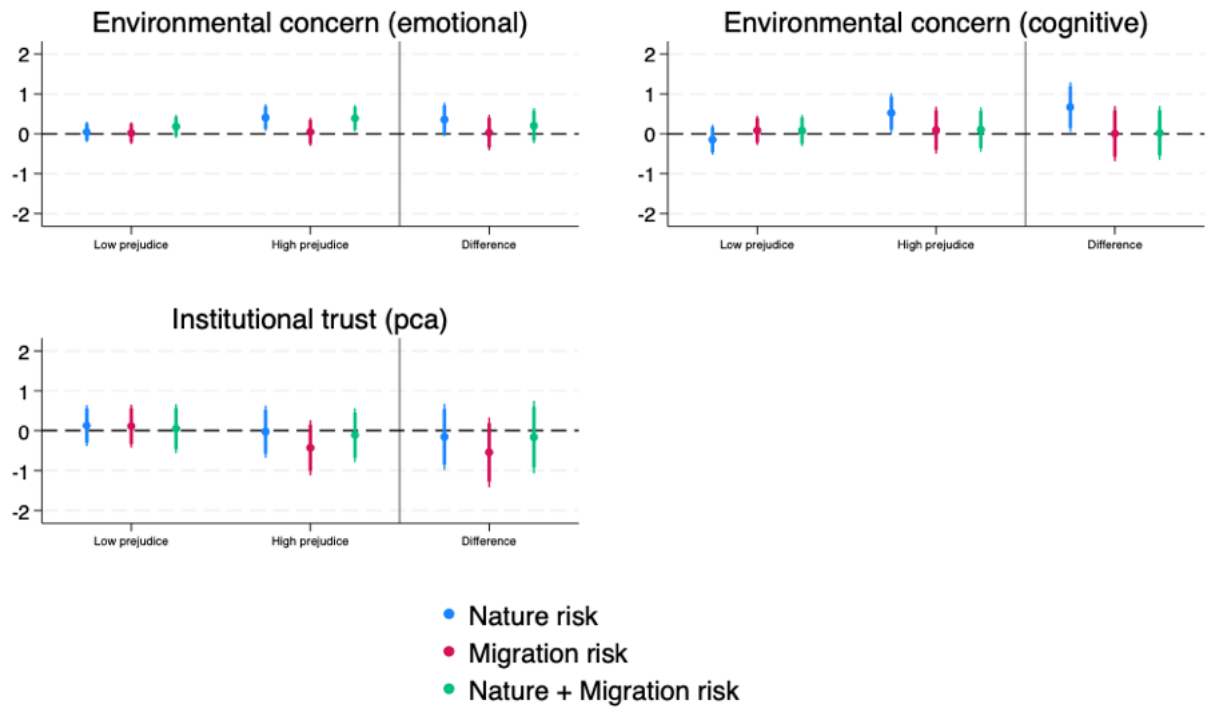
Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with social trust above/below the sample median.

Figure B11. Impact of the treatments on contribution, normative beliefs, empirical expectations and donations in the CRSD game by immigration prejudice.



Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with immigration prejudice above/below the sample median.

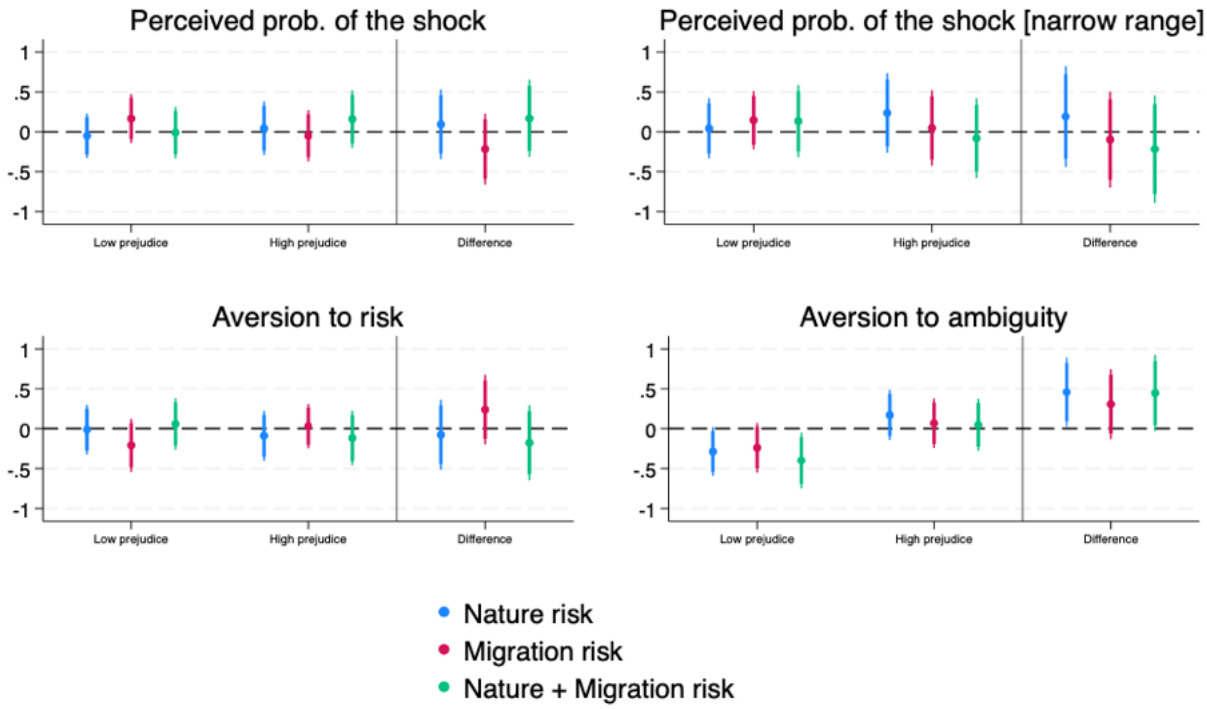
Figure B12. Impact of the treatments on environmental concern and institutional trust by immigration prejudice.



Notes: Figure shows marginal effects of the treatments from regressions controlling for age, gender, education

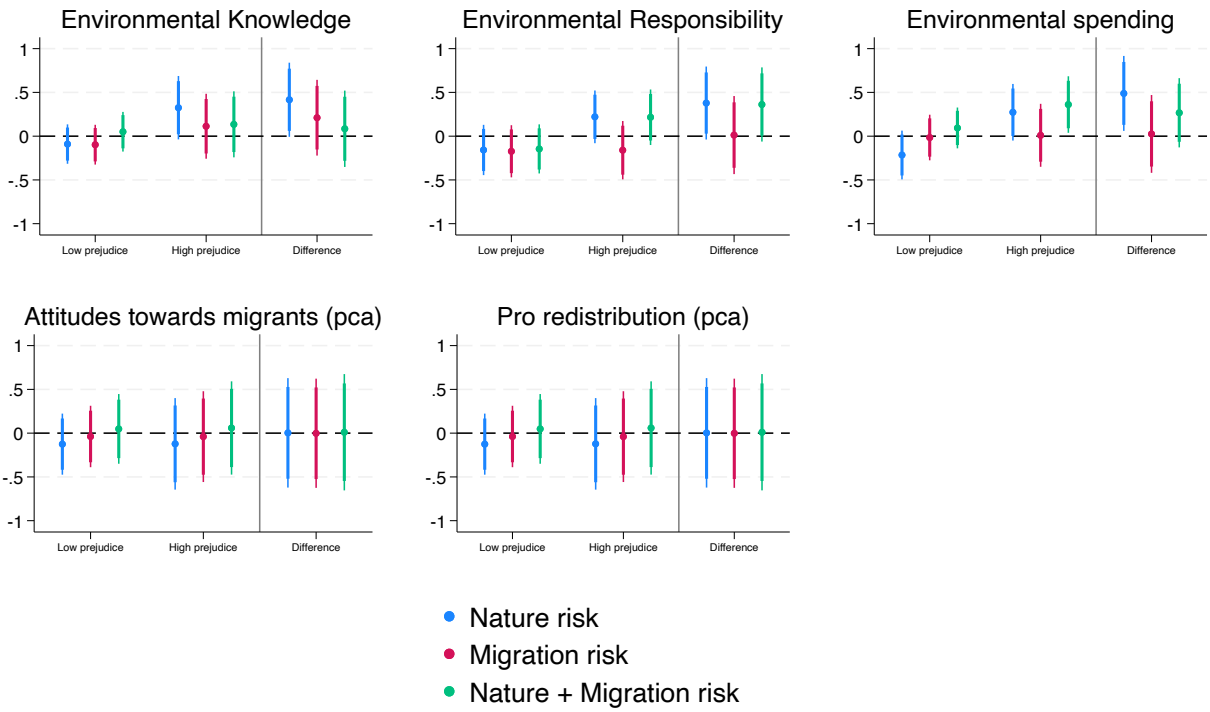
and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with immigration prejudice above/below the sample median.

Figure B13. Impact of the treatments on perceived probability of shock in CRSD game and on risk and ambiguity by immigration prejudice.



Notes: Figure shows marginal effect of the treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with immigration prejudice above/below the sample median.

Figure B14. Impact of the treatments on attitudes towards cc, immigration and redistribution by immigration prejudice.



Notes: Figure shows marginal effects of treatments from regressions controlling for age, gender, education and duration of the survey. Outcome variables are standardized. Robust standard errors. We distinguish between participants with immigration prejudice above/below the sample median.

Results from Figure B15 to Figure B50 reports all pre-registered heterogeneity analysis, which are not mentioned in the paper, to test H3. In general, we can observe that we have no heterogeneous treatment effect on physiological measures T/C. Therefore, H3 is not satisfied with respect to this outcome. On the other hand, we have found support for heterogeneous treatment effects for pro-environmental attitudes, concern, and beliefs, as well as behavioral outcomes, including donations in the CDG and contributions in the CRSD game. We do not cover heterogeneity by political orientation as participants to our lab experiment show an extremely low variation in political orientation, being concentrated on the left of the political spectrum (only 10% of respondents identify as rightwing). In all the following cases we split the sample in respondents that lie above or below the sample mean of the variable considered for heterogeneity, we consider variables measured in the pre-experimental survey.

Our additional heterogeneity results show that high institutional trust respondents increase probability distortion and pessimism, as measured by their prospect-theory PWF, following exposure to the ‘nature risk’ treatment (Figure B16). Respondents with low institutional trust are also found to reduce contributions in the 10% risk CRSD game, following exposure to ‘migration risk’ treatment, and reduce empirical expectations following exposure to both treatments when the risk of loss in the game is low (Figure B17).

Respondents with high environmental knowledge contribute more in the 10% risk CRSD game and have lower empirical expectations in the 90% risk CRSD game after exposure to information on climate induced natural disaster (Figure B21). These respondents also react to the 'nature risk' treatment by reducing personal normative beliefs over rounds in the low-risk version of the cooperative game (Figure B22).

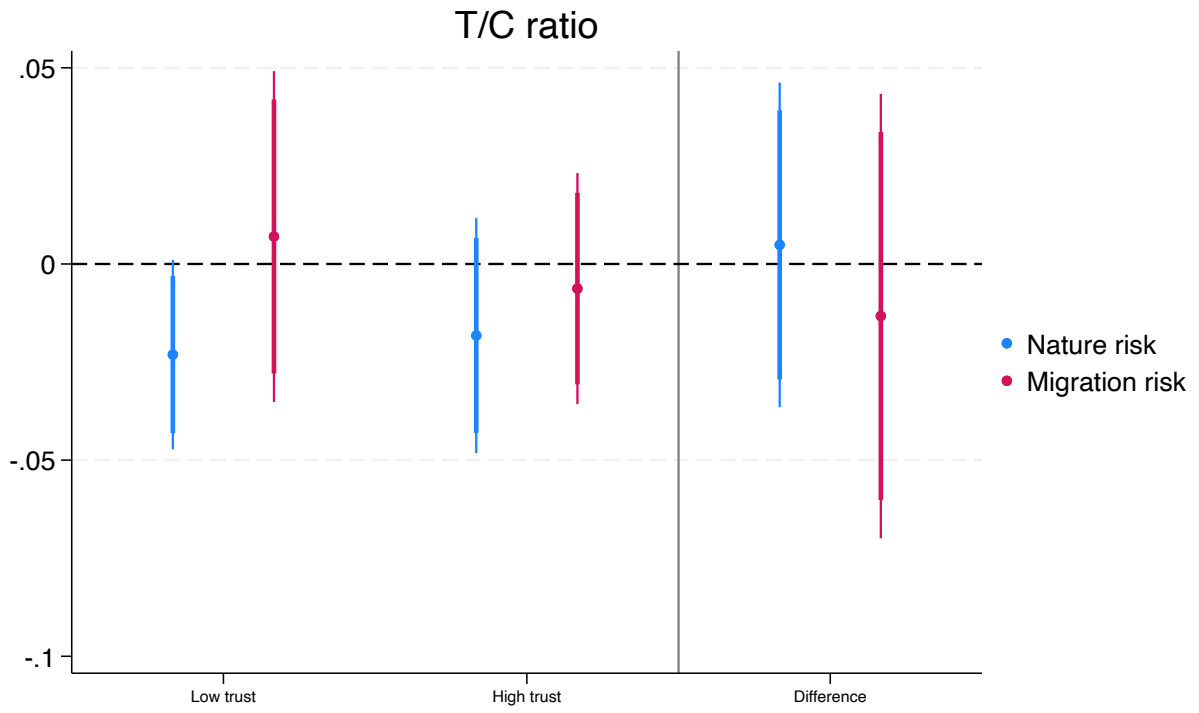
We examine variation in treatment effect for respondents with high vs low environmental attitudes. We consider two measures of environmental attitudes: environmental beliefs and cognitive environmental concern. By environmental beliefs we consider a principal component analysis (pca) variable capturing respondent's emotional environmental concern, environmental responsibility and their attitude towards environmental spending. Whereas, for cognitive environmental concern we consider a pca variable capturing respondents' answers to four questions related to how severe climate change is perceived. We find that respondents with a value of environmental beliefs higher than the sample median increase contribution in the 90% risk CRSD game (Figure B26), but reduce their empirical expectations over time (Figure B27) following exposure to the 'nature risk' treatment. The 'migration risk' treatment, on the other hand, reduces feeling of responsibility towards climate change for high belief respondents, whereas it increases cognitive environmental concern for low belief respondents (Figure B28). Respondents exhibiting low cognitive concern, in the 90% risk CRSD game, reduce empirical expectations over rounds because of the 'migration risk' treatment and reduce contributions over rounds because of the 'nature risk' treatment (Figure B32). On the other hand, concerned respondents react to the 'nature risk' treatment with a progressive reduction of contributions in the 10% risk CRSD game (Figure B32), and an increase in support for environmental spending (Figure B33).

We analyze the differential in treatment effects for respondents with a higher (lower) degree of risk aversion than the sample mean. Respondents with low risk aversion are induced by the 'nature risk' treatment to reduce contributions in the 10% risk CRSD game (Figure B36). The 'nature risk' treatment has also the effect of increasing personal normative beliefs, over rounds, in the low-risk version of the collective game for risk averse respondents (Figure B37).

Respondents with high patience are those who say to be more willing to postpone monetary income. We find that low patience respondents are more likely to react to the 'migration risk' treatment, as they increase their donations in the CDG (Figure B41), reduce emotional environmental concern and increase support for limit heating (Figure B43). Patient respondents, on the other hand, reduce empirical expectations in the 10% risk CRSD game because of 'migration risk' treatment (Figure B41). They also reduce personal normative beliefs over time in the high-risk version of the same game, when exposed to information on natural disasters in their country (Figure B42).

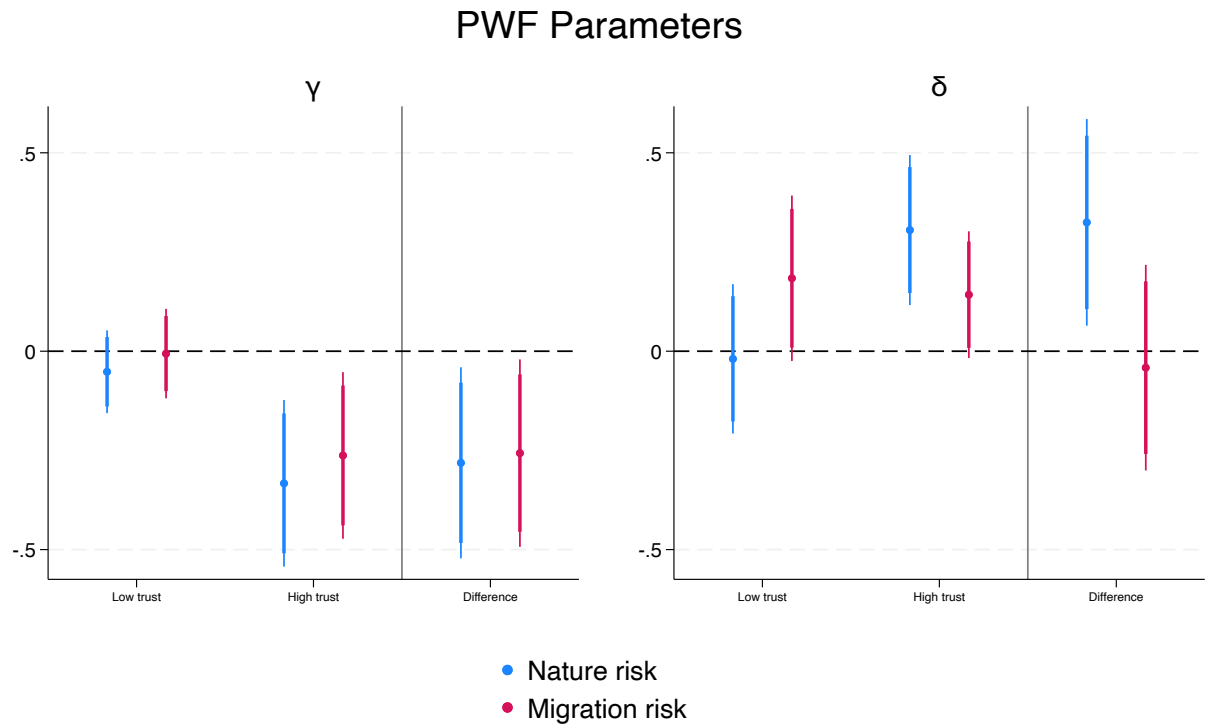
The two treatments do not have strong differential impacts for people with different levels of immigration prejudice. In particular, we observe that the 'nature risk' treatment increases distortion for high prejudiced participants (Figure B45).

Figure B15. Hormonal response to the treatments by institutional trust.



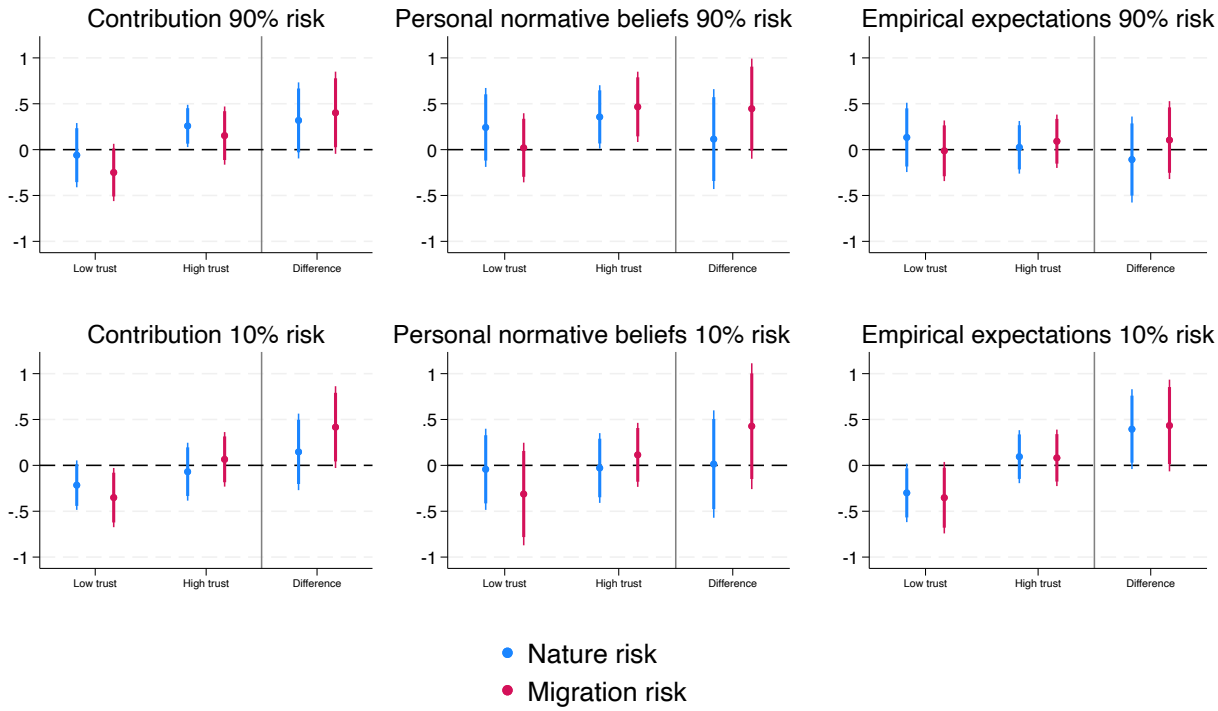
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) institutional trust are those that have levels of institutional trust above (below) the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B16. Impact of treatments on PWF parameters by institutional trust.



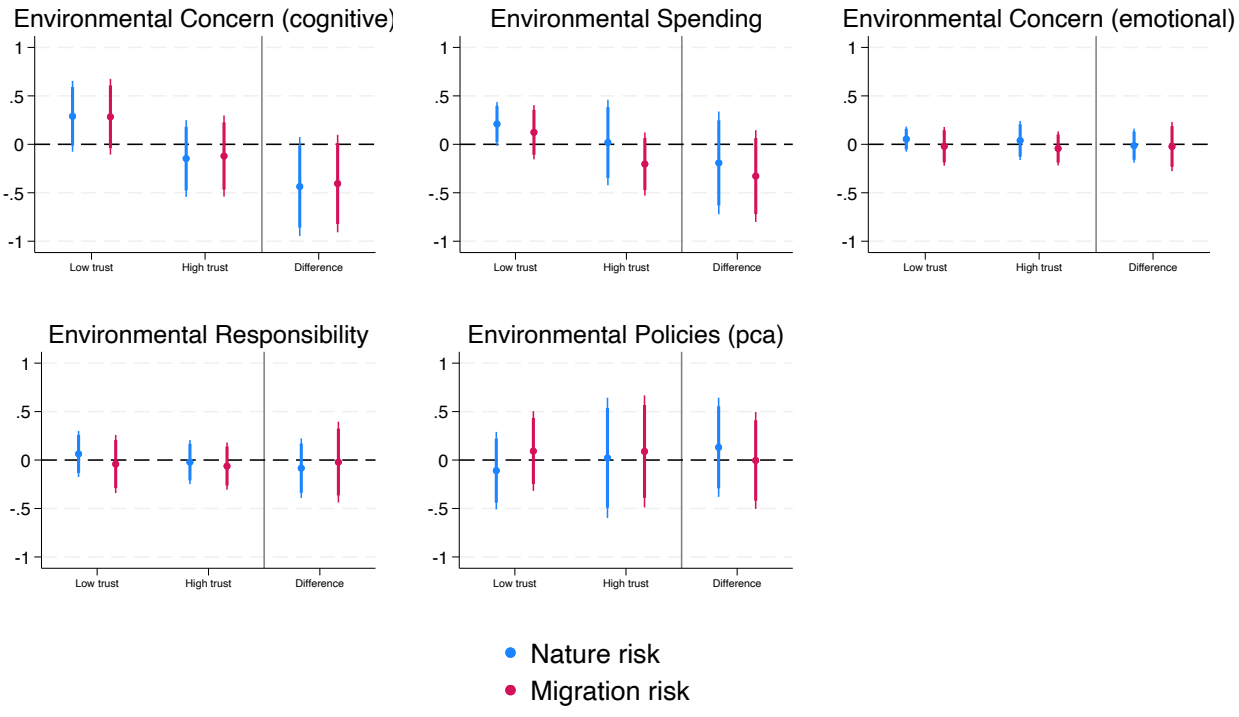
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) institutional trust are those that have levels of institutional trust above (below) the sample median. Standard errors are clustered at the individual level.

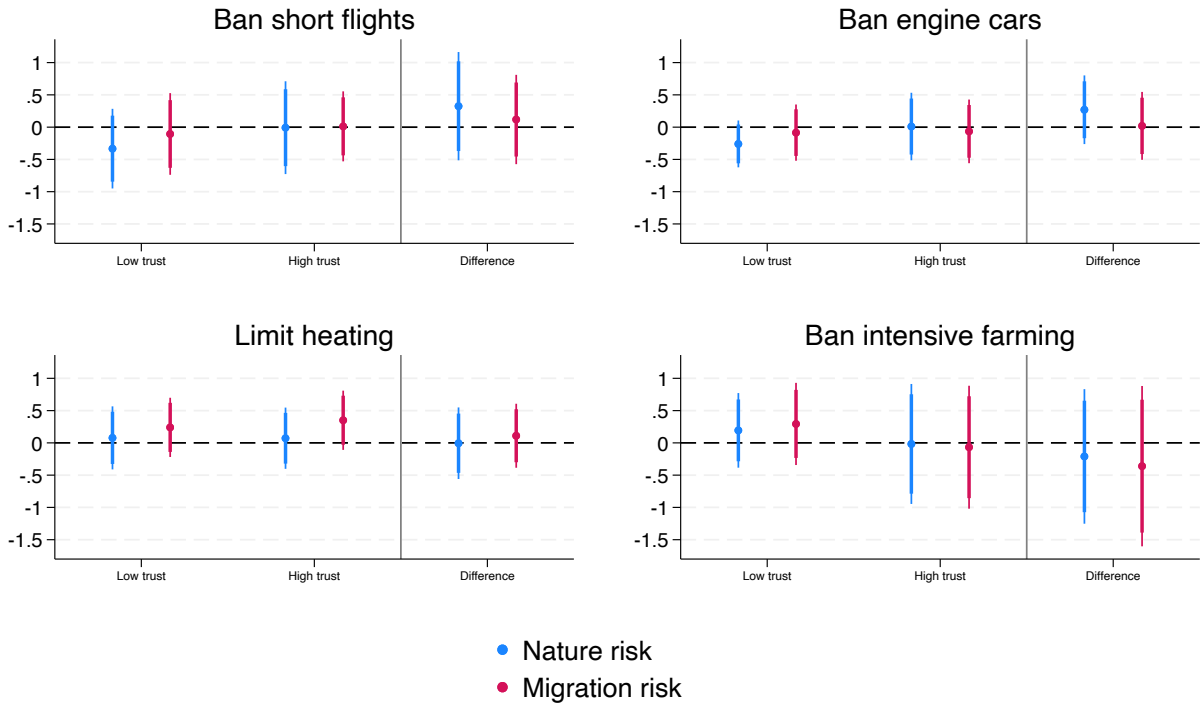
Figure B17. Treatments impact on CRSD game by institutional trust.



Notes: CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) institutional trust are those that have levels of institutional trust above (below) the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

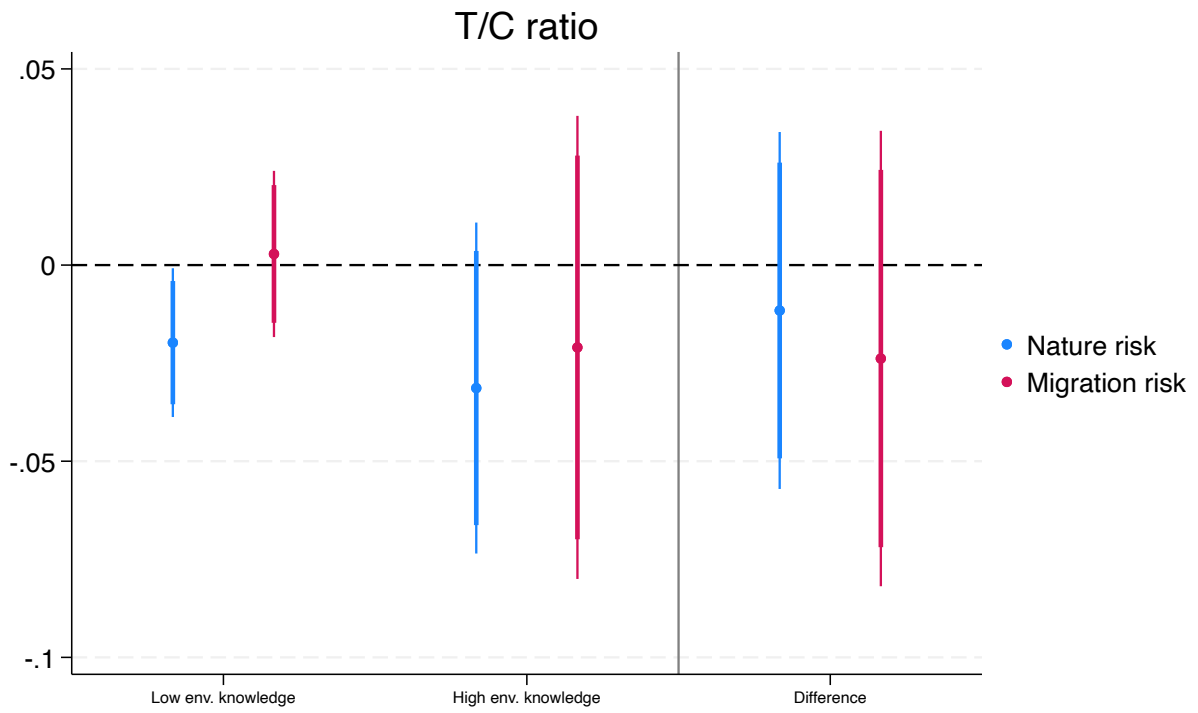
Figure B18. Impact of information podcasts on environmental attitudes, support for environmental policies by institutional trust.





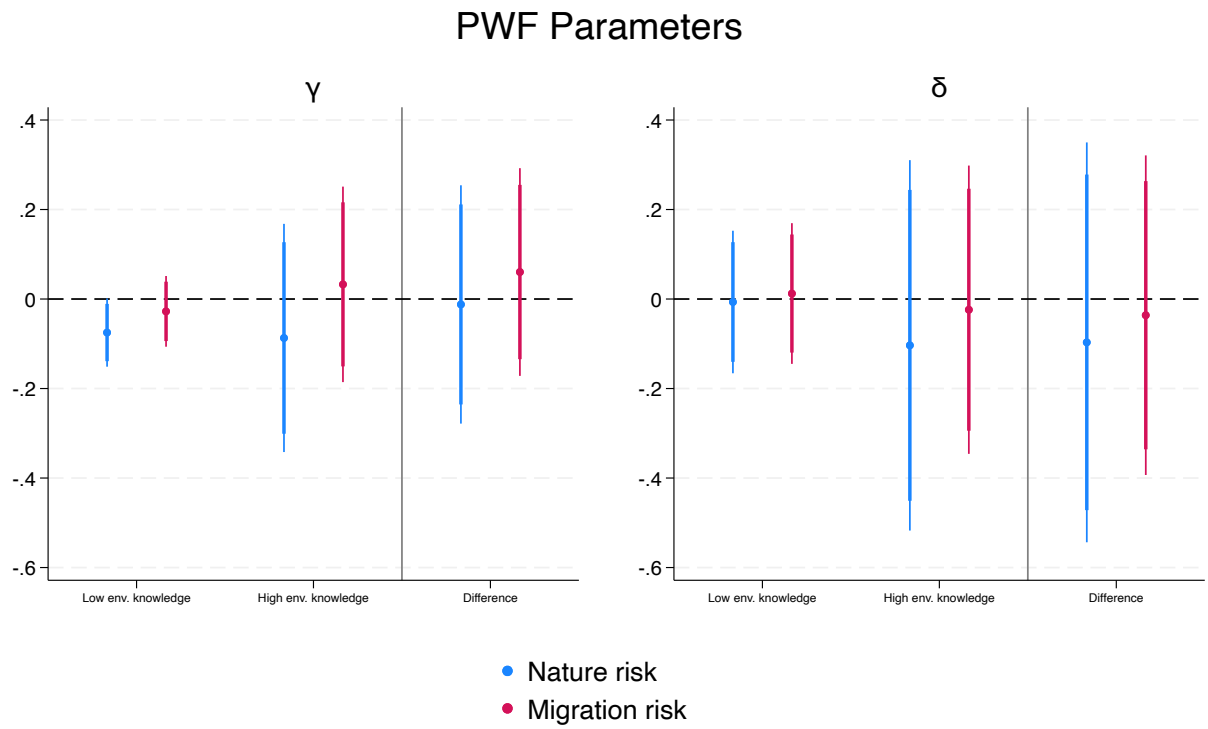
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) institutional trust are those that have levels of institutional trust above (below) the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B19. Hormonal response to the treatments by environmental knowledge.



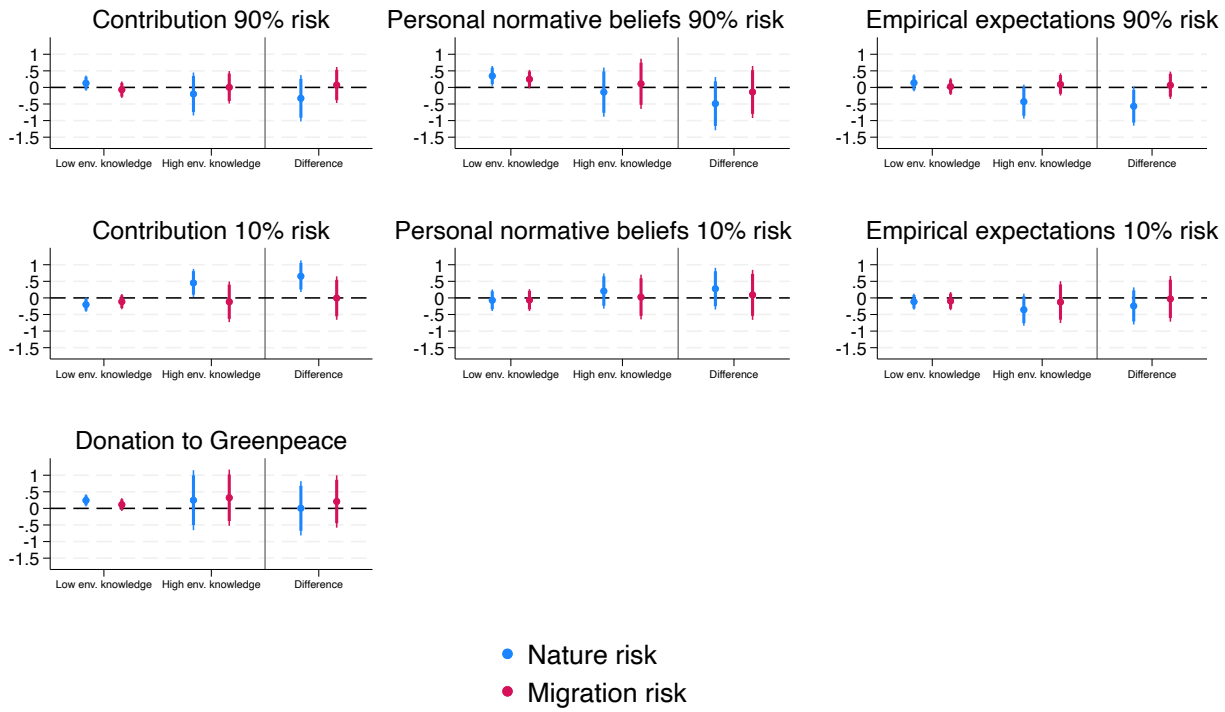
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) environmental knowledge are those that recognize the anthropogenic nature of climate change more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B20. Impact of treatments on PWF parameters by environmental knowledge.



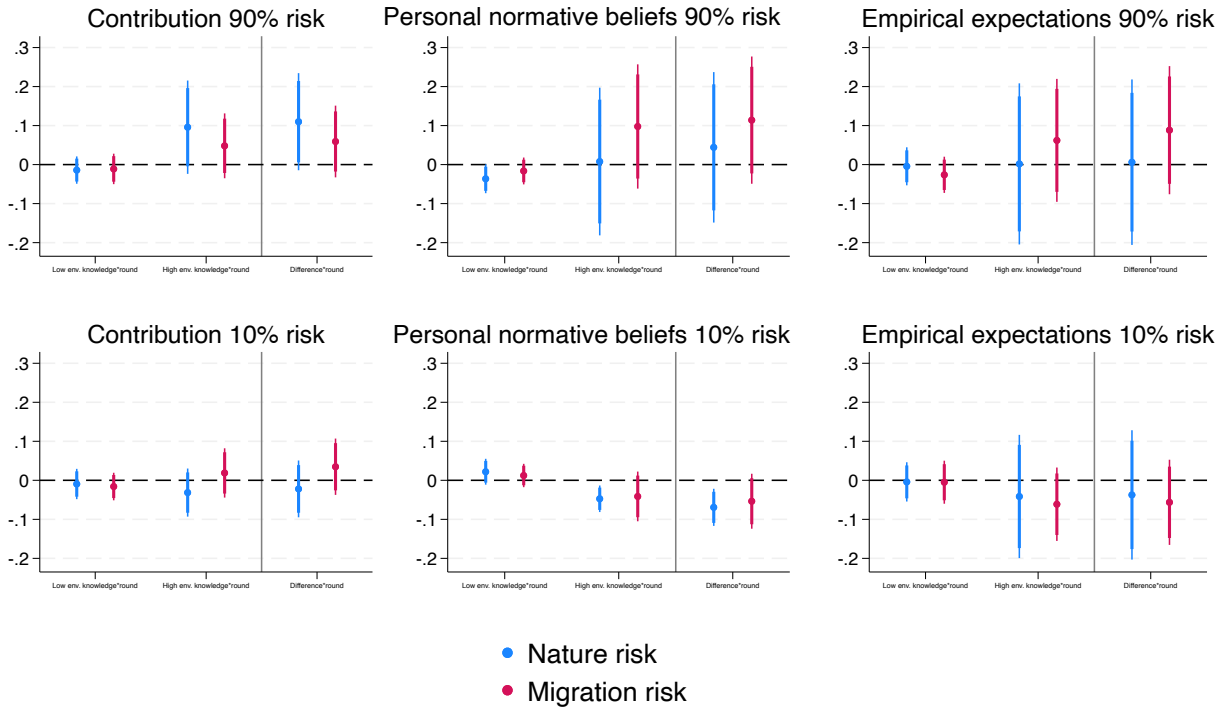
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) environmental knowledge are those that recognize the anthropogenic nature of climate change more (less) than the sample median. Standard errors are clustered at the individual level.

Figure B21. Treatments impact on CDG and CRSD game by environmental knowledge.



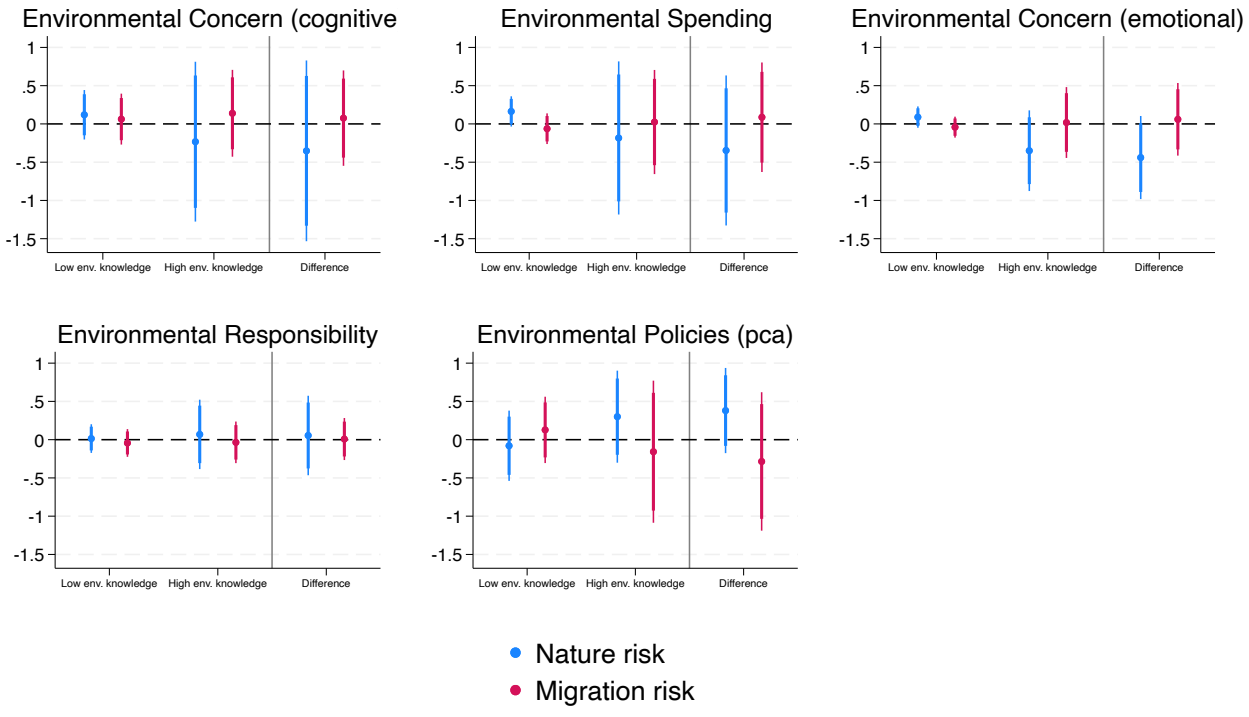
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) environmental knowledge are those that recognize the anthropogenic nature of climate change more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

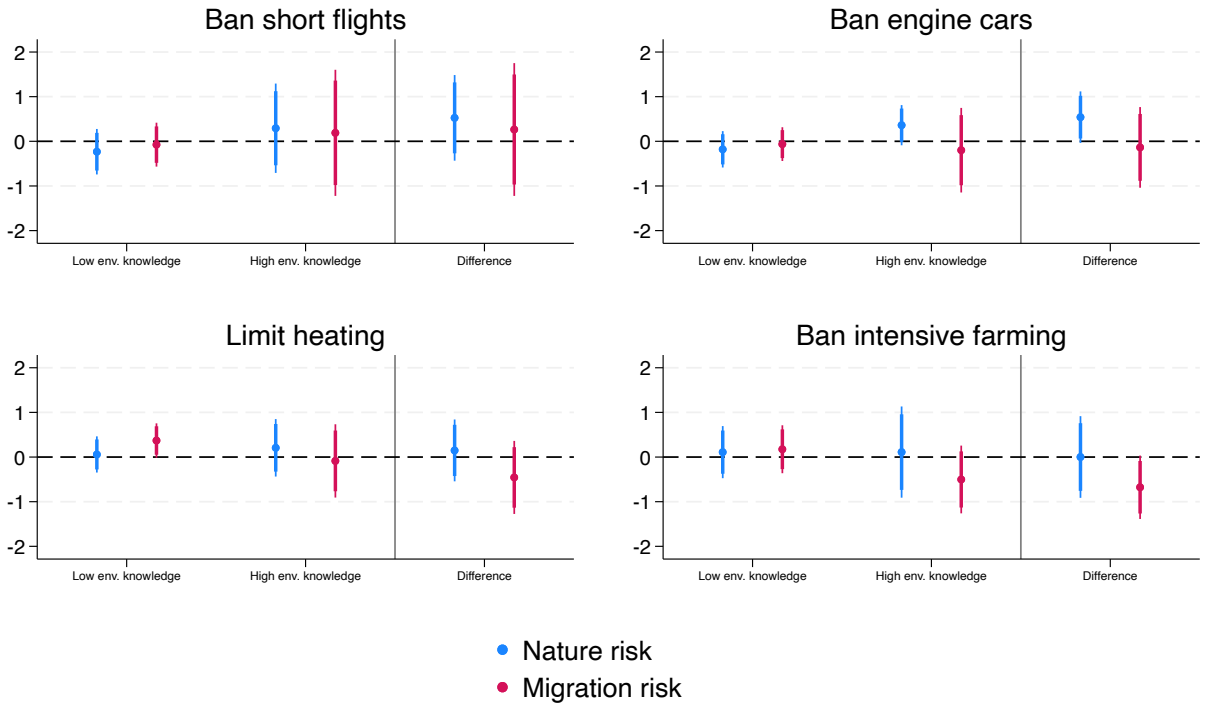
Figure B22. Treatments impact on CRSD game by environmental knowledge.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) environmental knowledge are those that recognize the anthropogenic nature of climate change more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

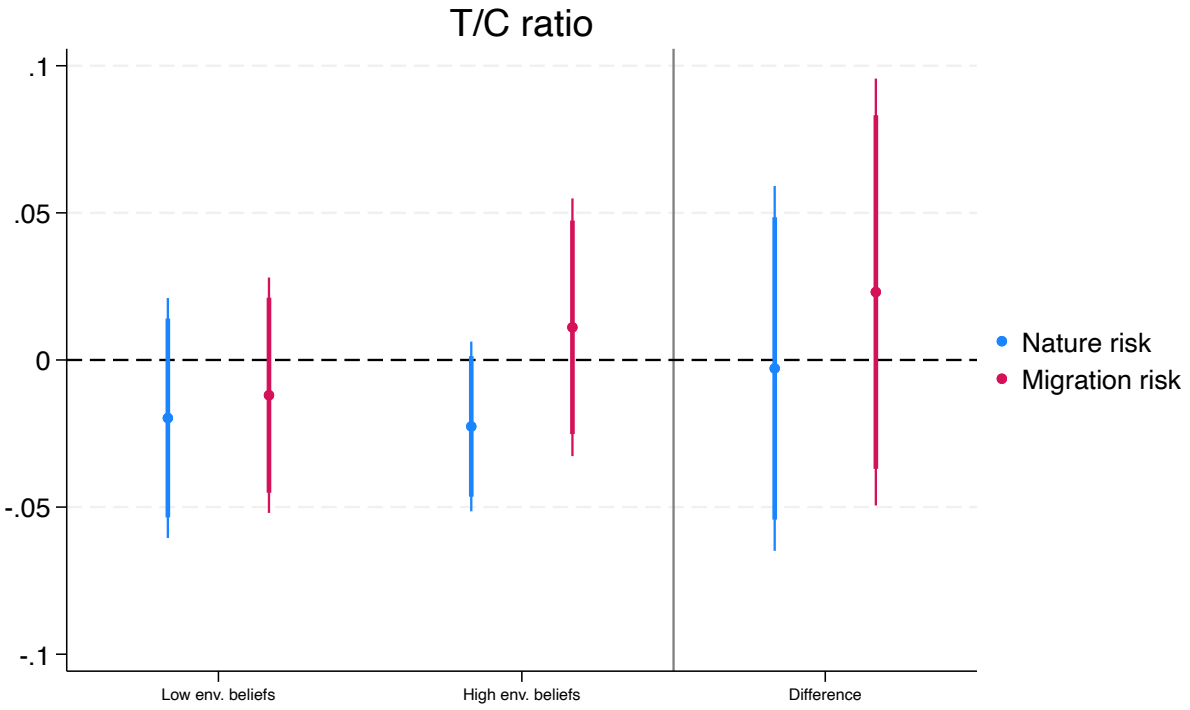
Figure B23. Impact of information podcasts on environmental attitudes, support for environmental policies by environmental knowledge.





Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) environmental knowledge are those that recognize the anthropogenic nature of climate change more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

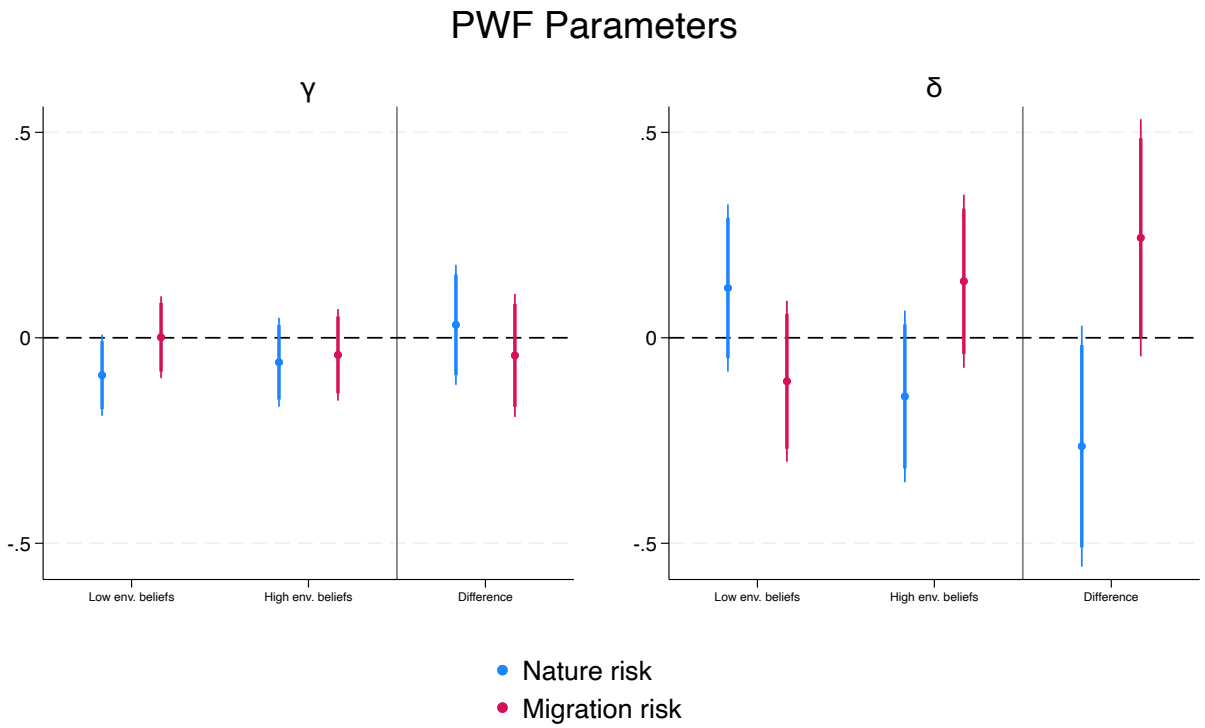
Figure B24. Hormonal response to the treatments by environmental beliefs.



Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) environmental beliefs are those that have a value of environmental beliefs (emotional concern, responsibility

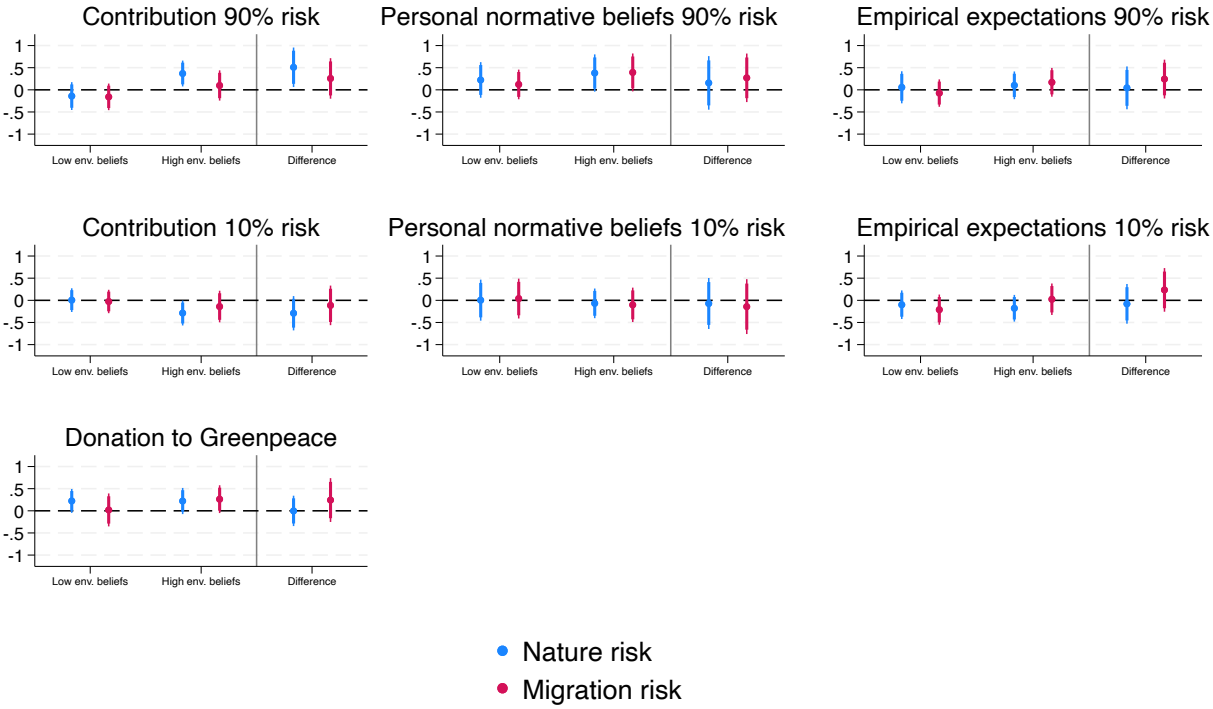
and spending) above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B25. Impact of treatments on PWF parameters by environmental beliefs.



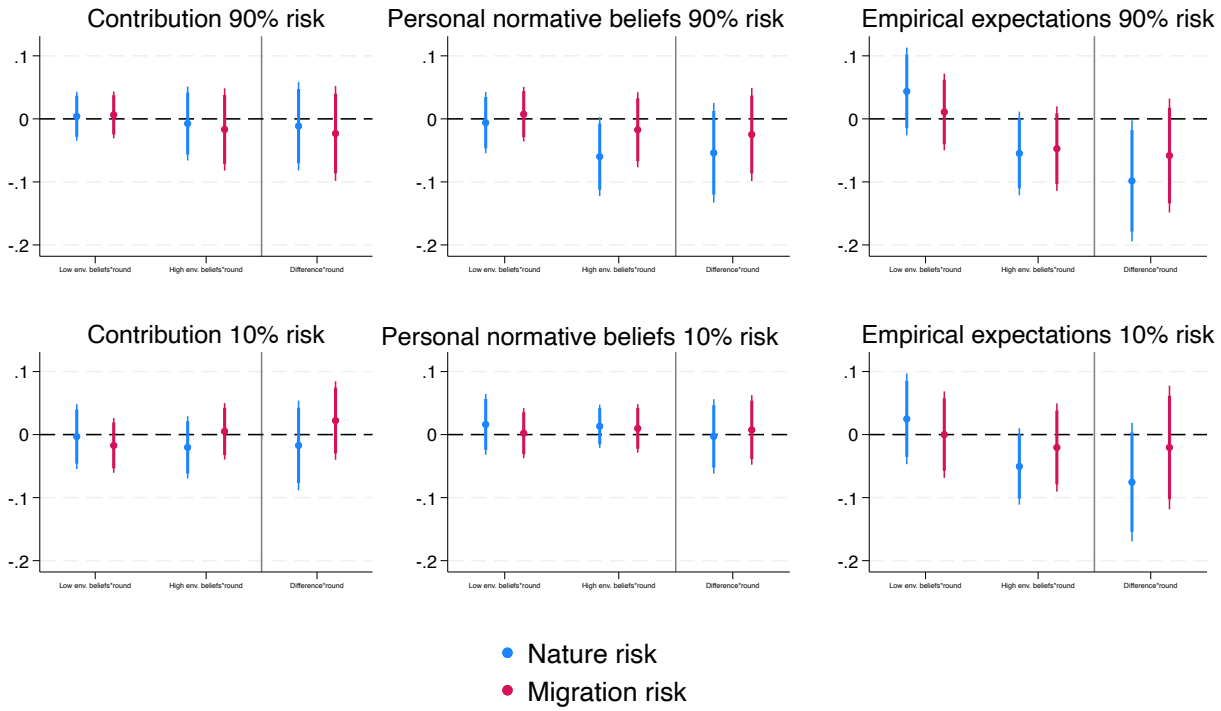
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) environmental beliefs are those that have a value of environmental beliefs (emotional concern, responsibility and spending) above (below) than the sample median. Standard errors are clustered at the individual level.

Figure B26. Treatments impact on CDG and CRSD game by environmental beliefs.



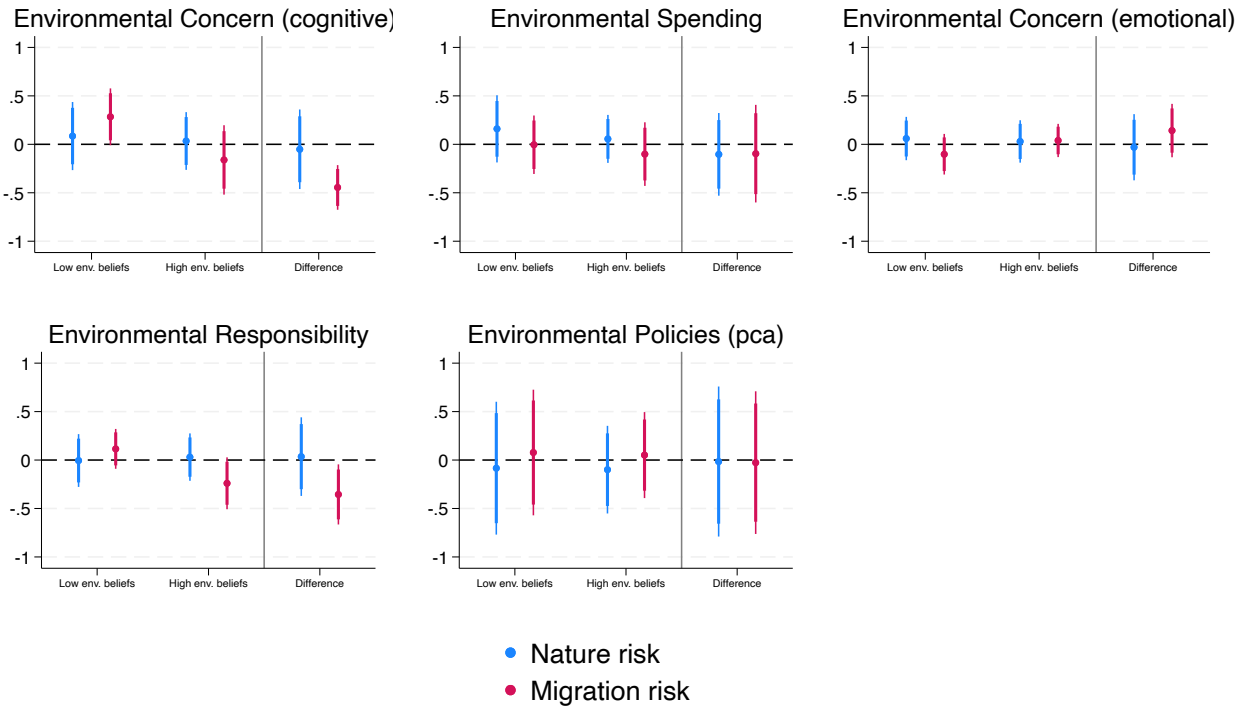
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) environmental beliefs are those that have a value of environmental beliefs (emotional concern, responsibility and spending) above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

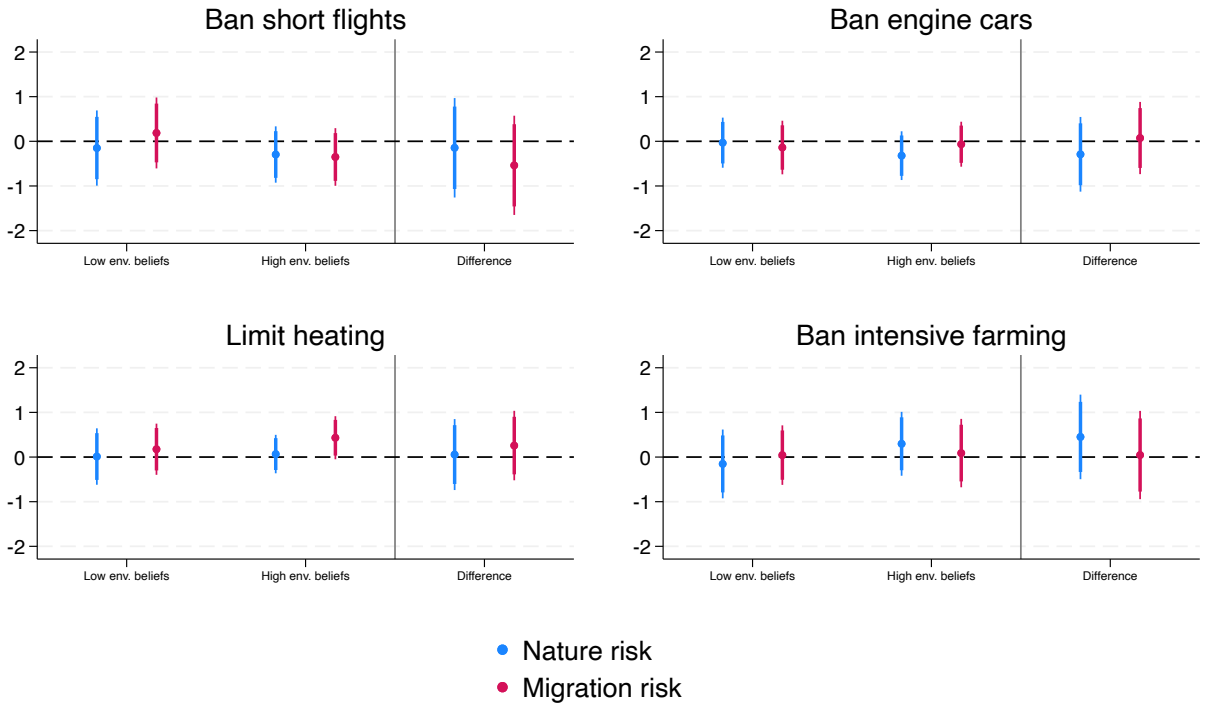
Figure B27. Treatments impact on CRSD game by environmental beliefs.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) environmental beliefs are those that have a value of environmental beliefs (emotional concern, responsibility and spending) above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

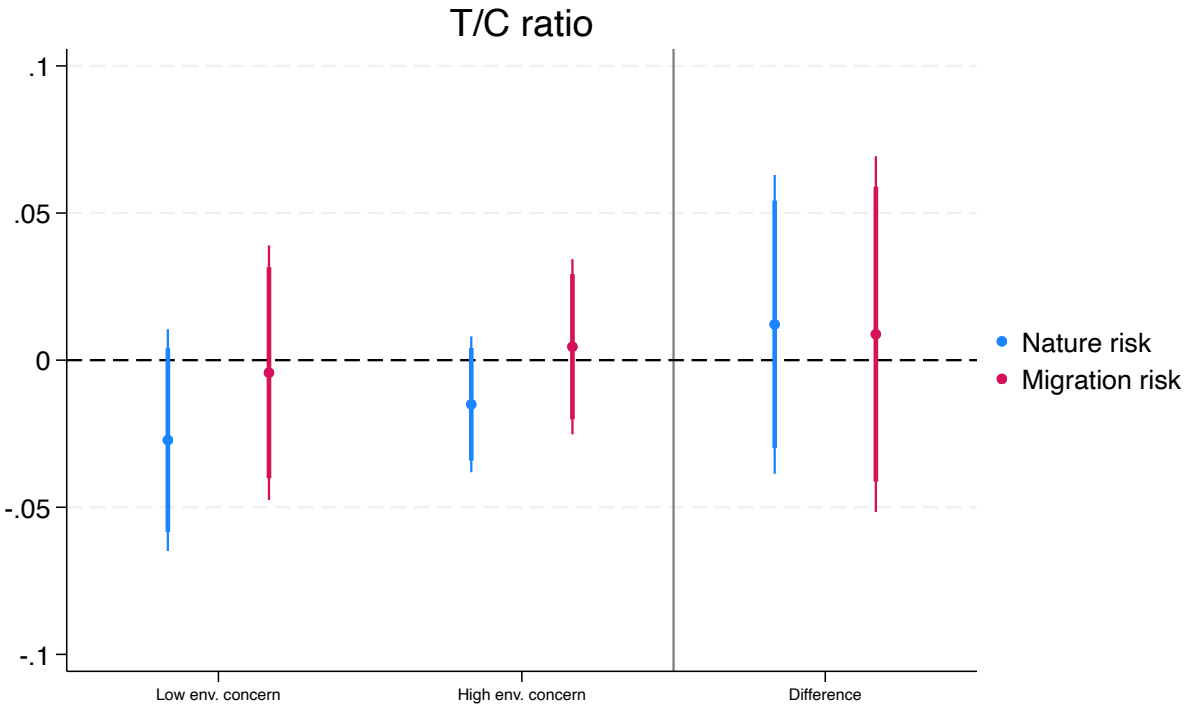
Figure B28. Impact of information podcasts on environmental attitudes, support for environmental policies by environmental beliefs.





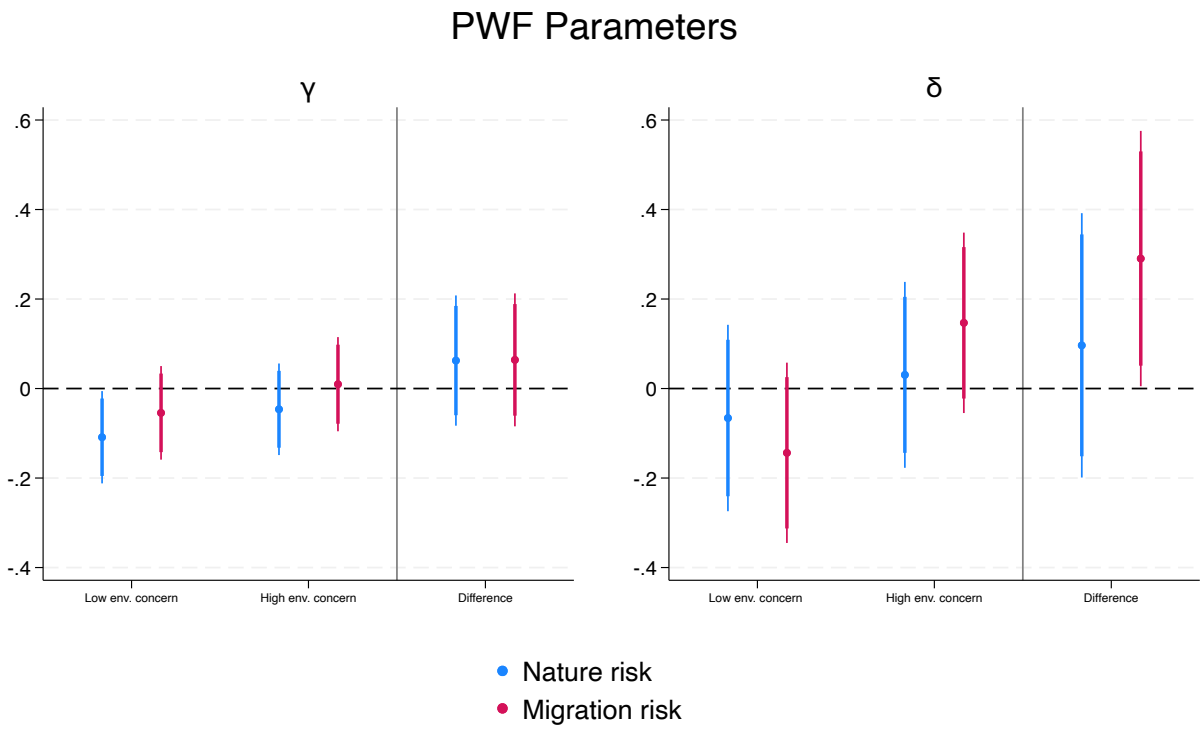
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) environmental beliefs are those that have a value of environmental beliefs (emotional concern, responsibility and spending) above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B29. Hormonal response to the treatments by cognitive environmental concern.



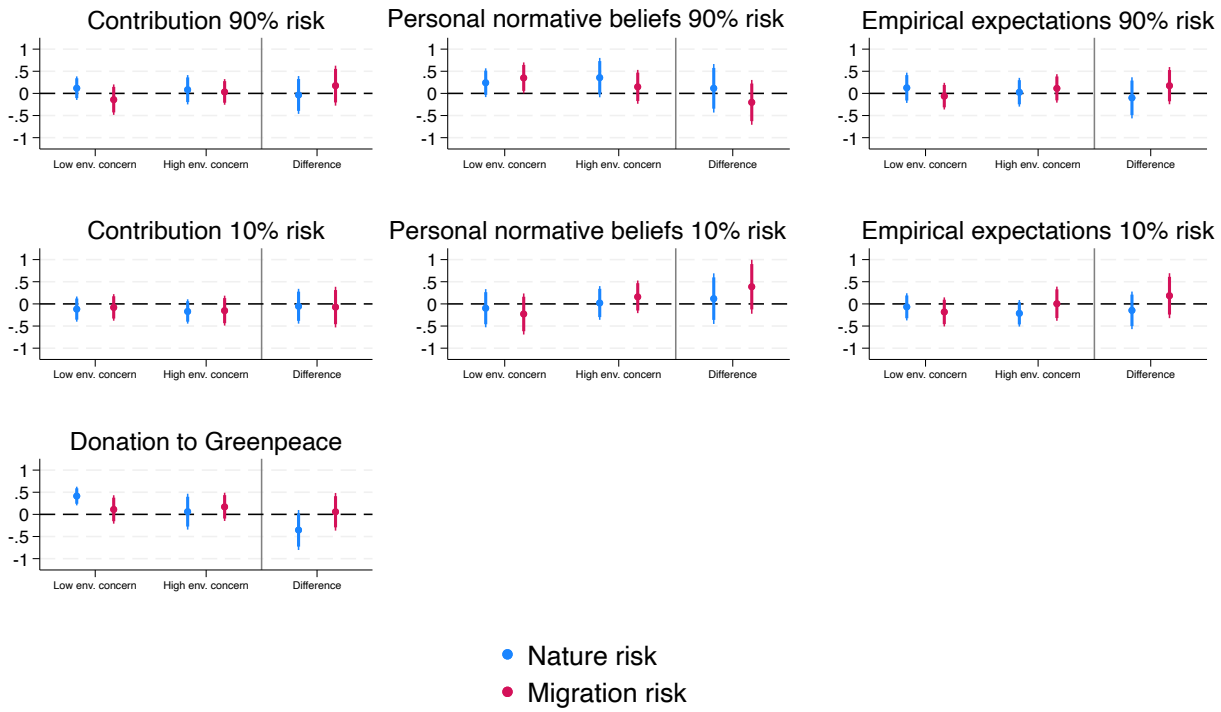
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) environmental concern are those that have a value of cognitive environmental concern above (below) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the session level.

Figure B30. Impact of treatments on PWF parameters by cognitive environmental concern.



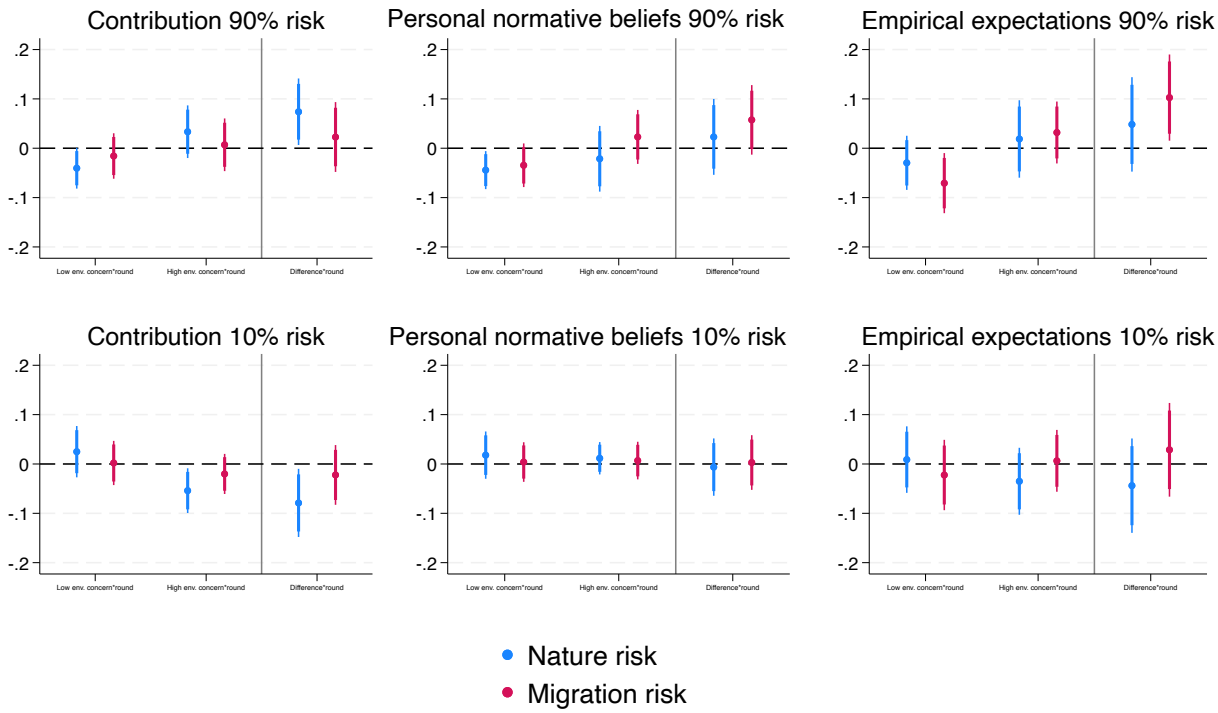
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) environmental concern are those that have a value of cognitive environmental concern above (below) than the sample median. Standard errors are clustered at the individual level.

Figure B31. Treatments impact on CDG and CRSD game by cognitive environmental concern.



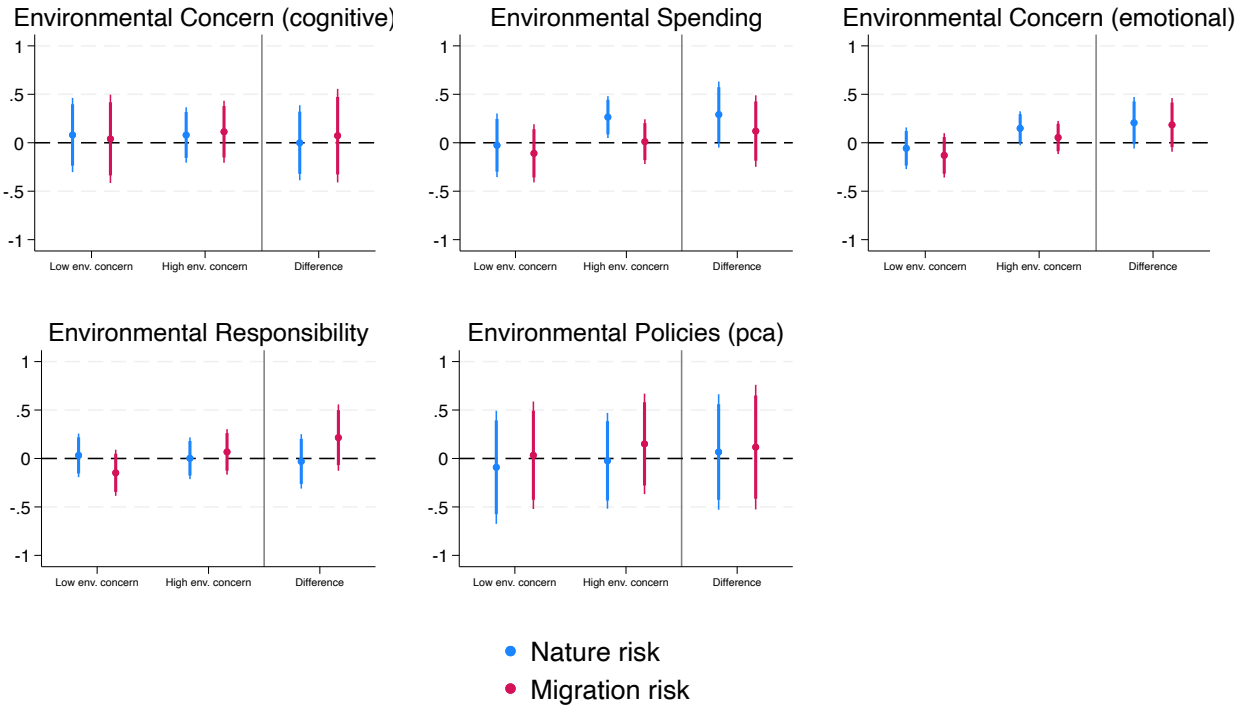
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) environmental concern are those that have a value of cognitive environmental concern above (below) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the individual level.

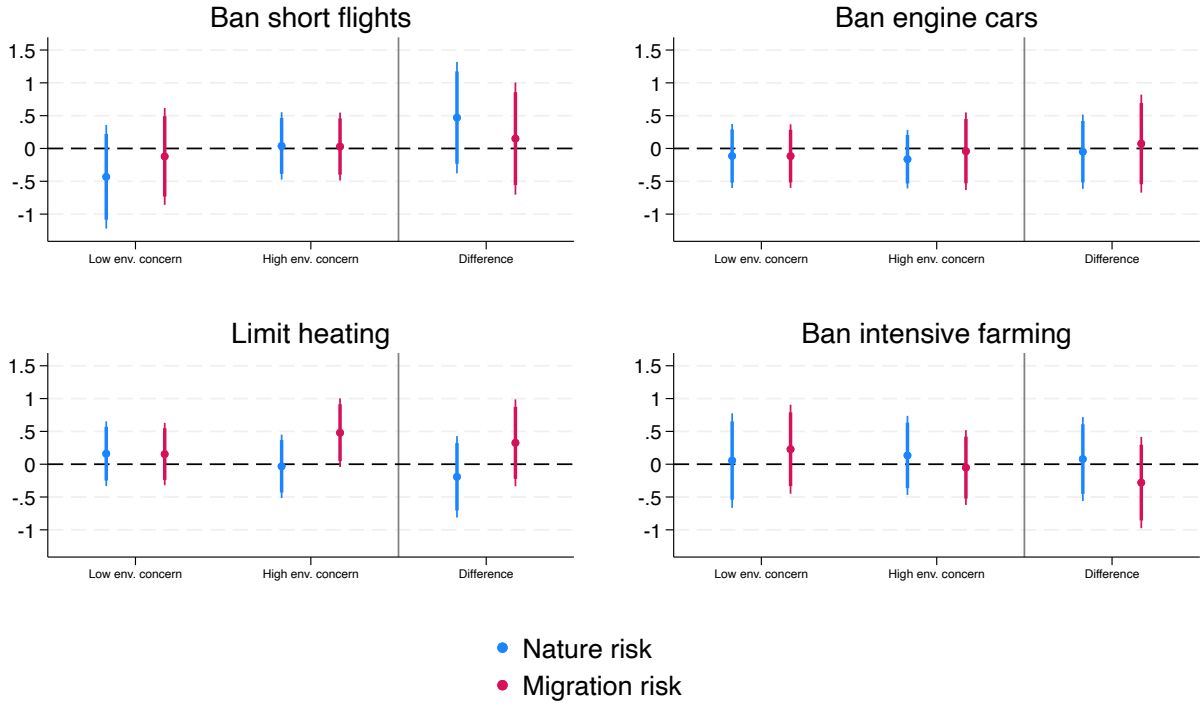
Figure B32. Treatments impact on CRSD game by cognitive environmental concern.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) environmental concern are those that have a value of cognitive environmental concern above (below) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the individual level.

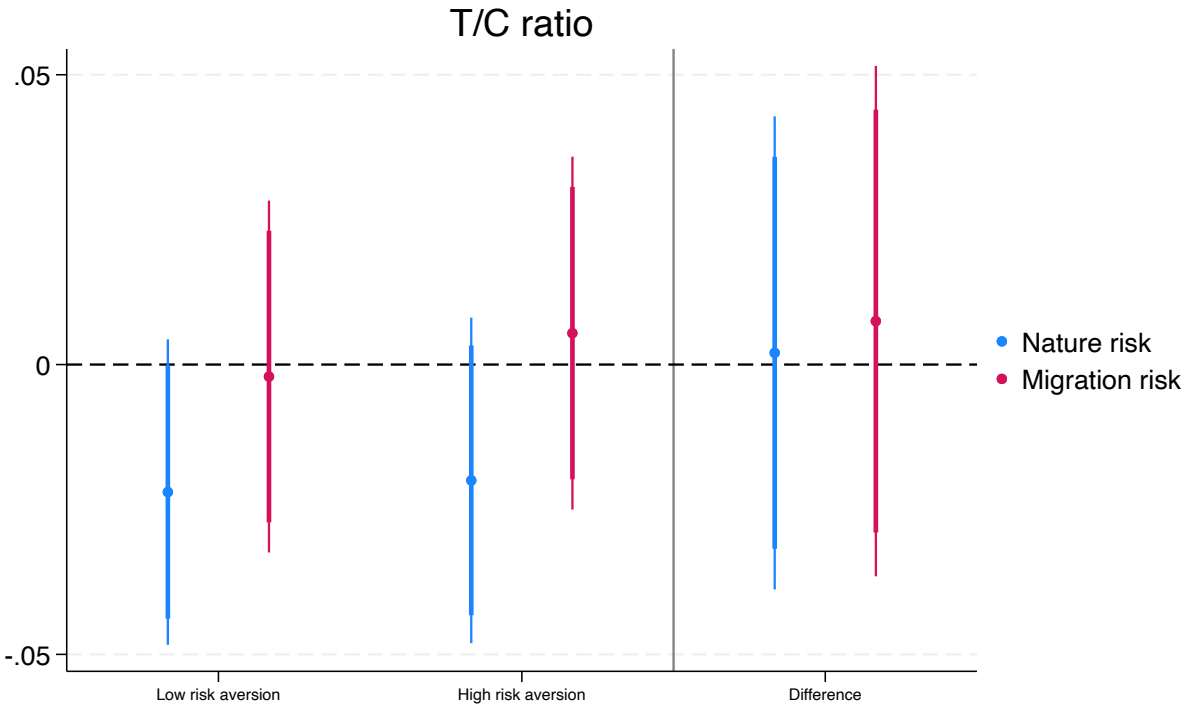
Figure B33. Impact of information podcasts on environmental attitudes, support for environmental policies by cognitive environmental concern.





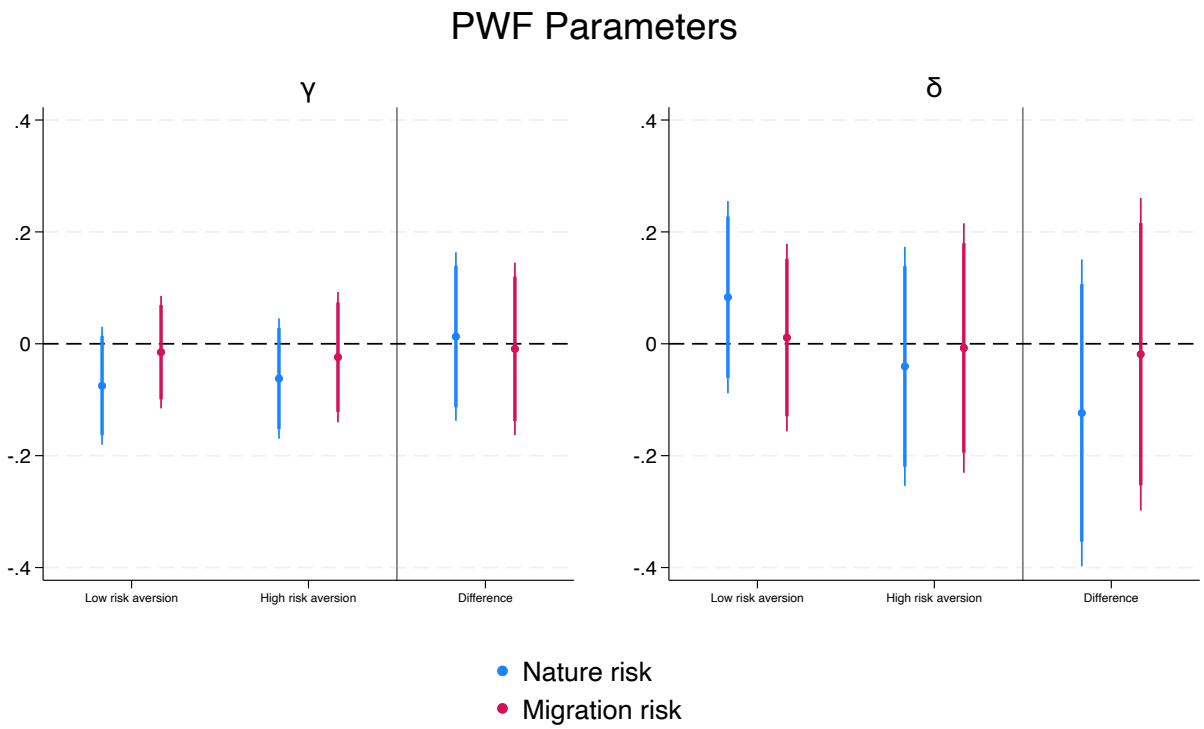
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) environmental concern are those that have a value of cognitive environmental concern above (below) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the session level.

Figure B34. Hormonal response to the treatments by risk aversion.



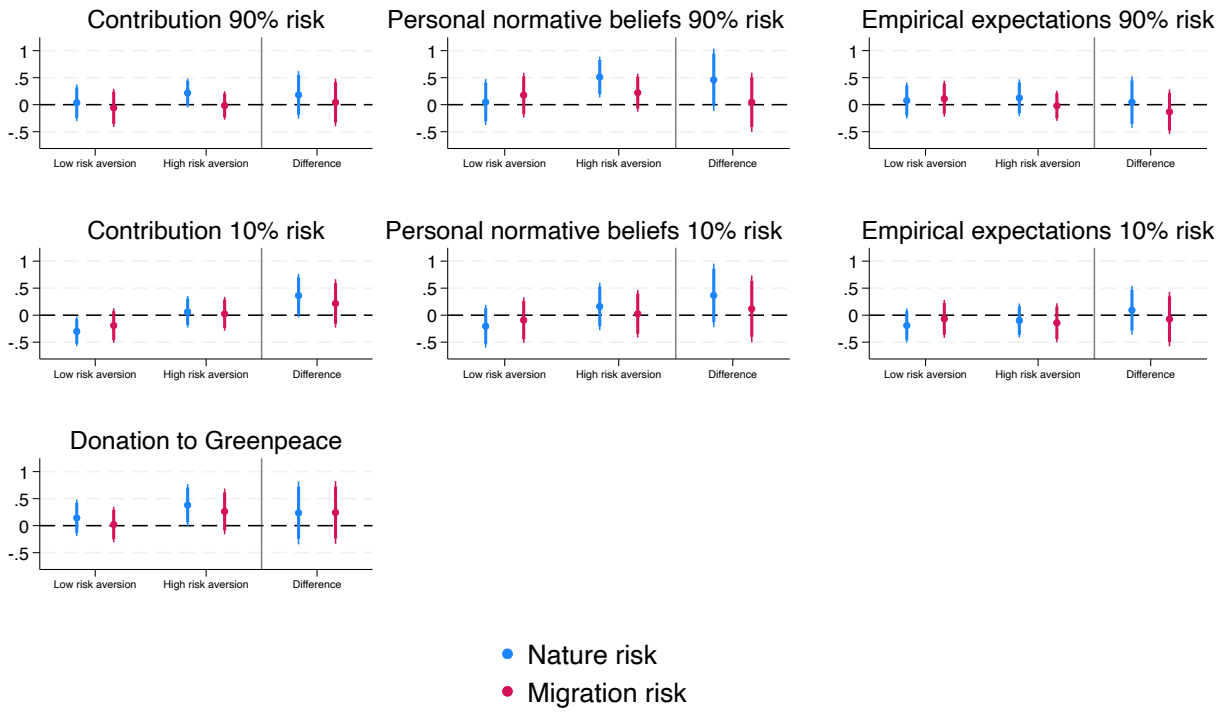
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) risk aversion are those that have a certain equivalent for 50% risk of loss lotteries below (above) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the session level.

Figure B35. Impact of treatments on PWF parameters by risk aversion.



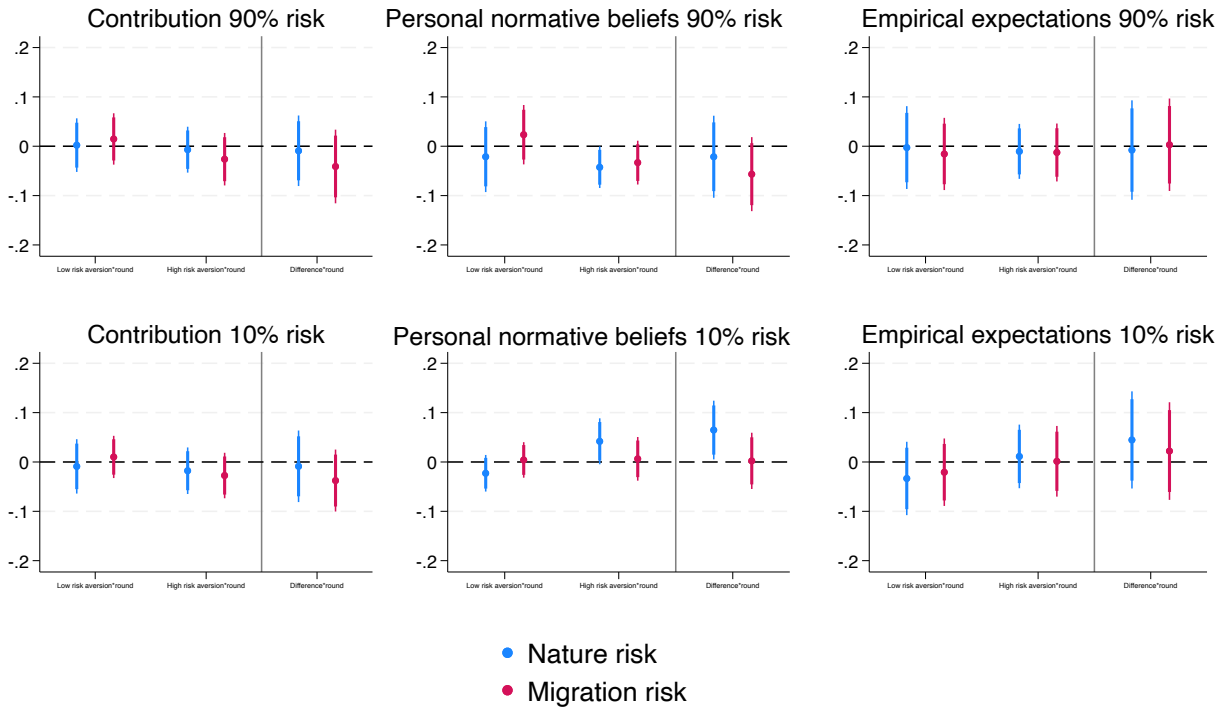
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) risk aversion are those that have a certain equivalent for 50% risk of loss lotteries below (above) than the sample median. Standard errors are clustered at the individual level.

Figure B36. Treatments impact on CDG and CRSD game by risk aversion.



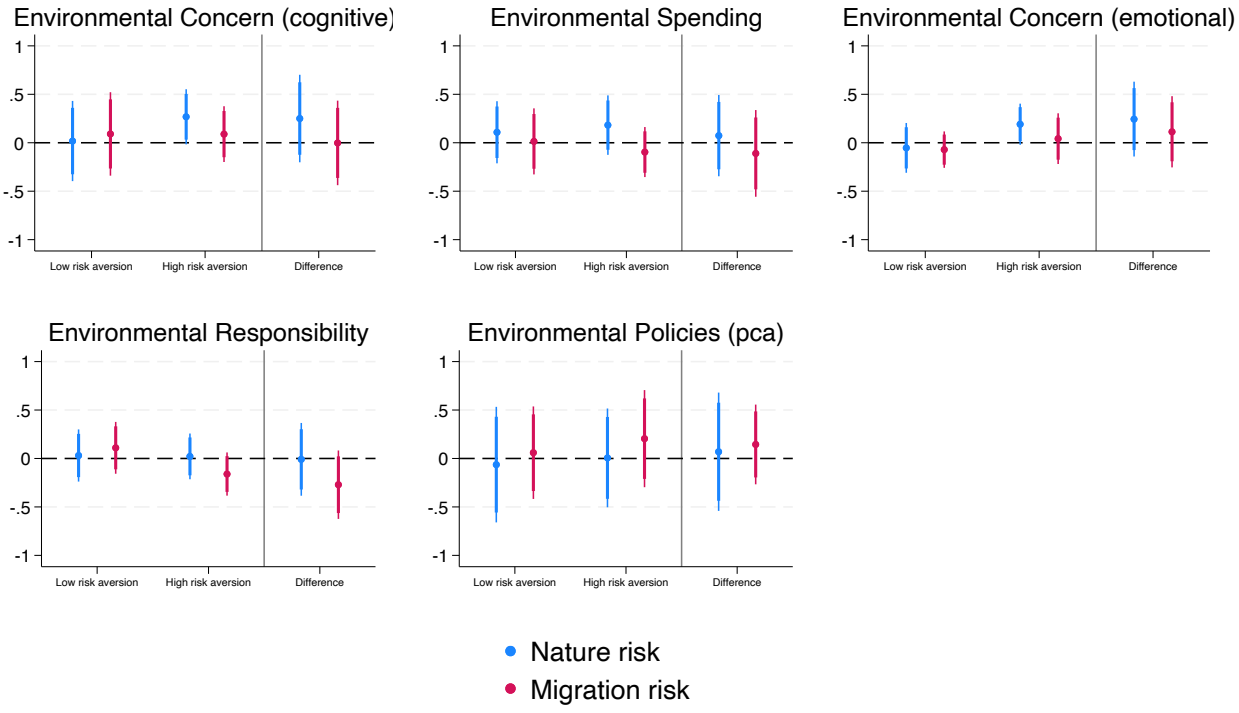
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) risk aversion are those that have a certain equivalent for 50% risk of loss lotteries below (above) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the individual level.

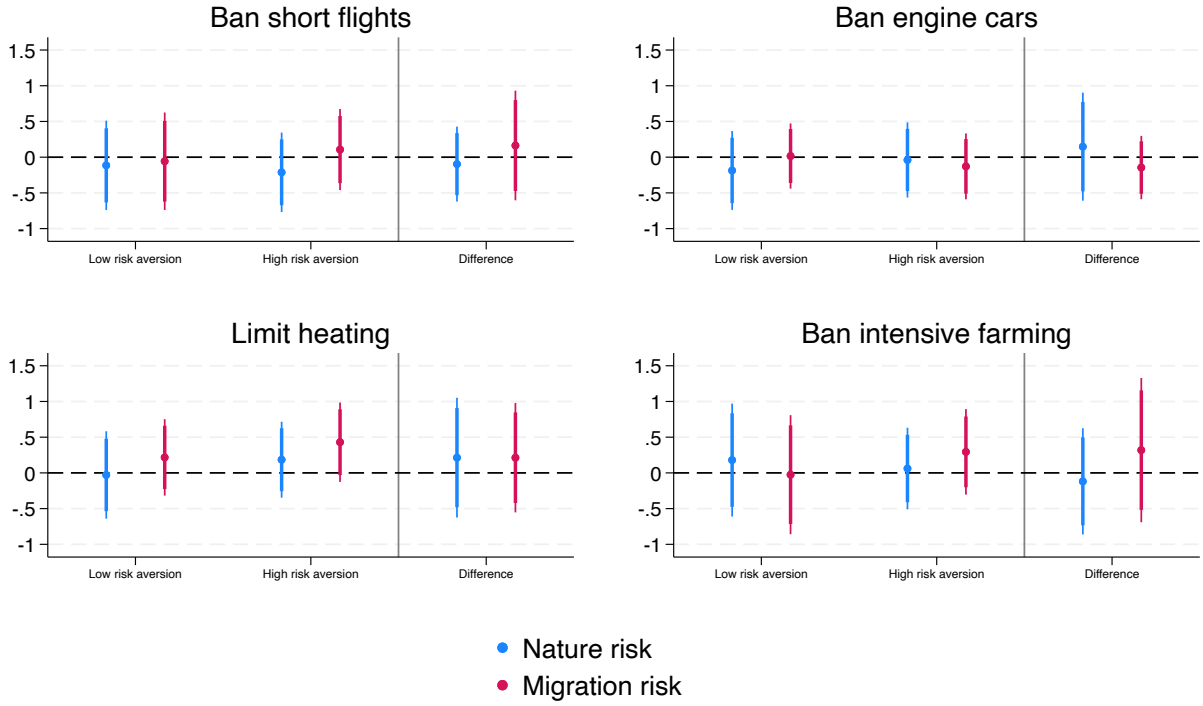
Figure B37. Treatments impact on CRSD game by risk aversion.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) risk aversion are those that have a certain equivalent for 50% risk of loss lotteries below (above) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the individual level.

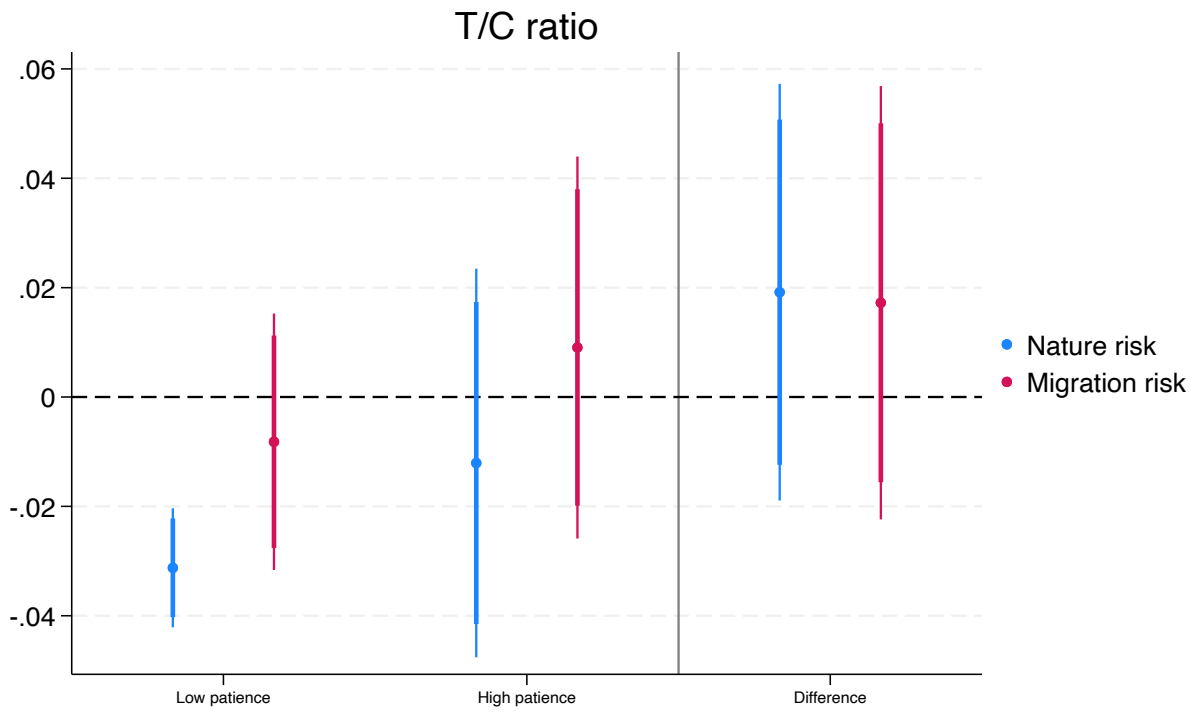
Figure B38. Impact of information podcasts on environmental attitudes, support for environmental policies by risk aversion.





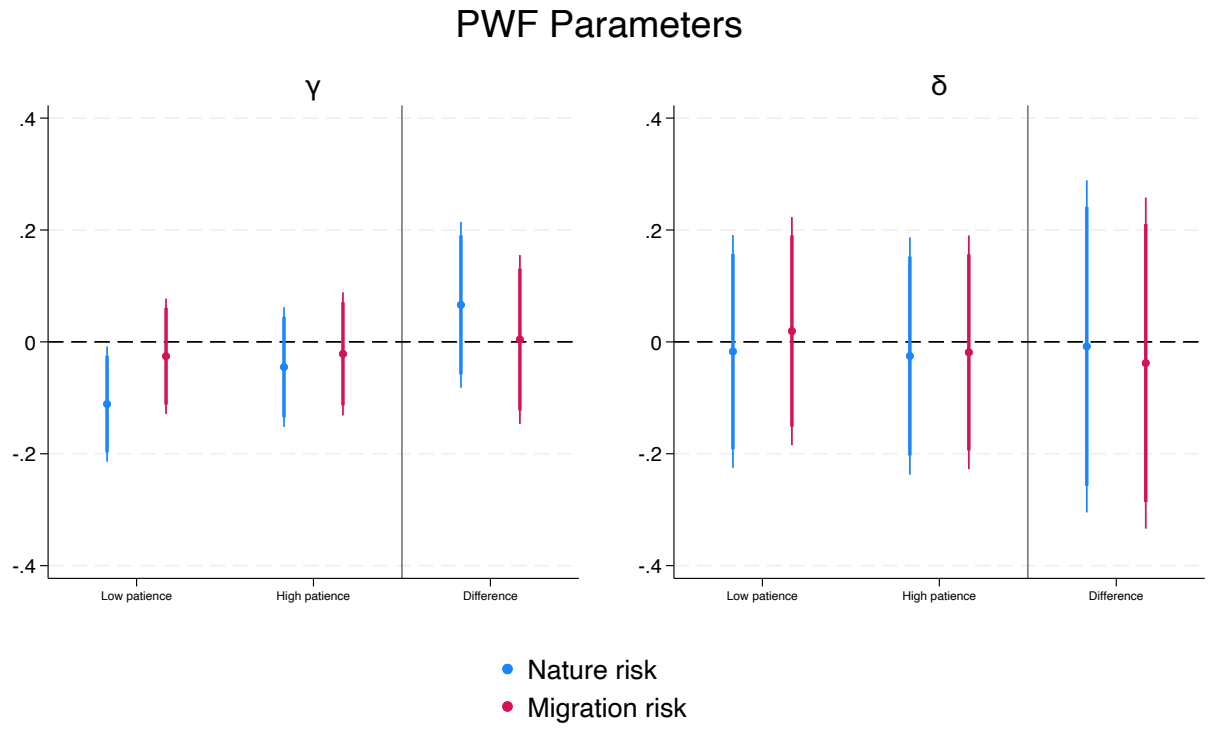
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) risk aversion are those that have a certain equivalent for 50% risk of loss lotteries below (above) than the sample median. Outcomes variables are standardized. Standard errors are clustered at the session level.

Figure B39. Hormonal response to the treatments by time preferences.



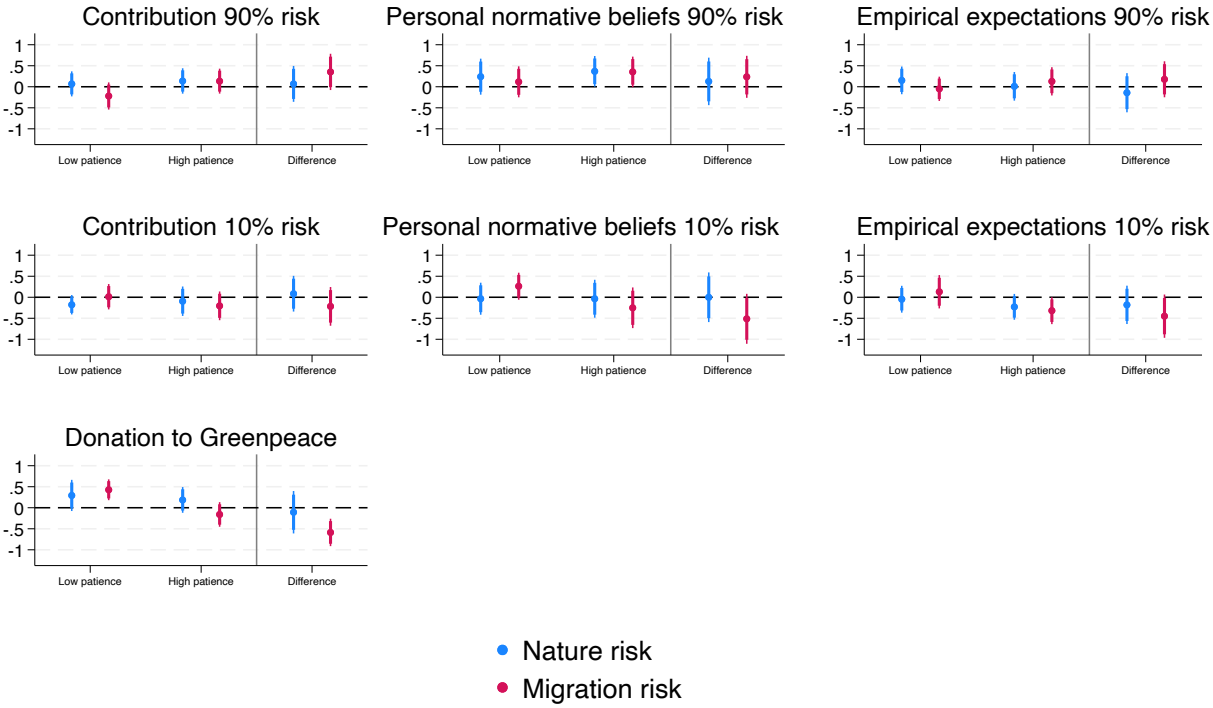
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) patience are those that prefer postponing earnings more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B40. Impact of treatments on PWF parameters by time preferences.



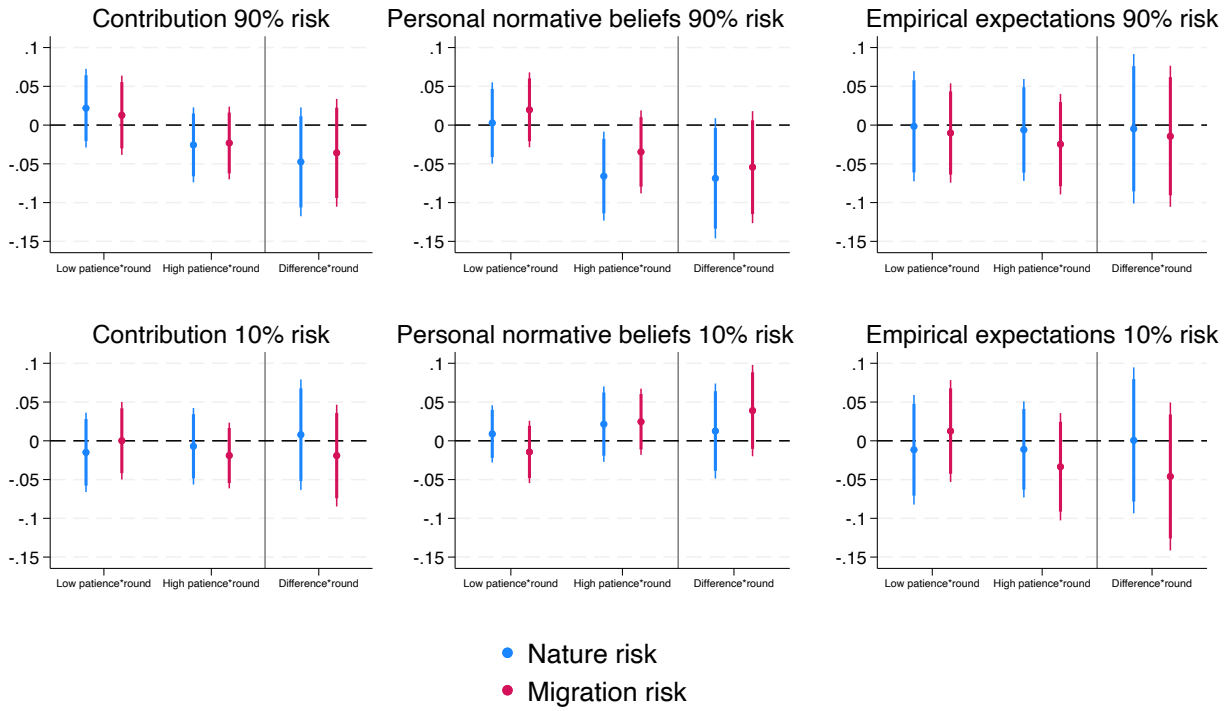
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) patience are those that prefer postponing earnings more (less) than the sample median. Standard errors are clustered at the individual level.

Figure B41. Treatments impact on CDG and CRSD game by time preferences.



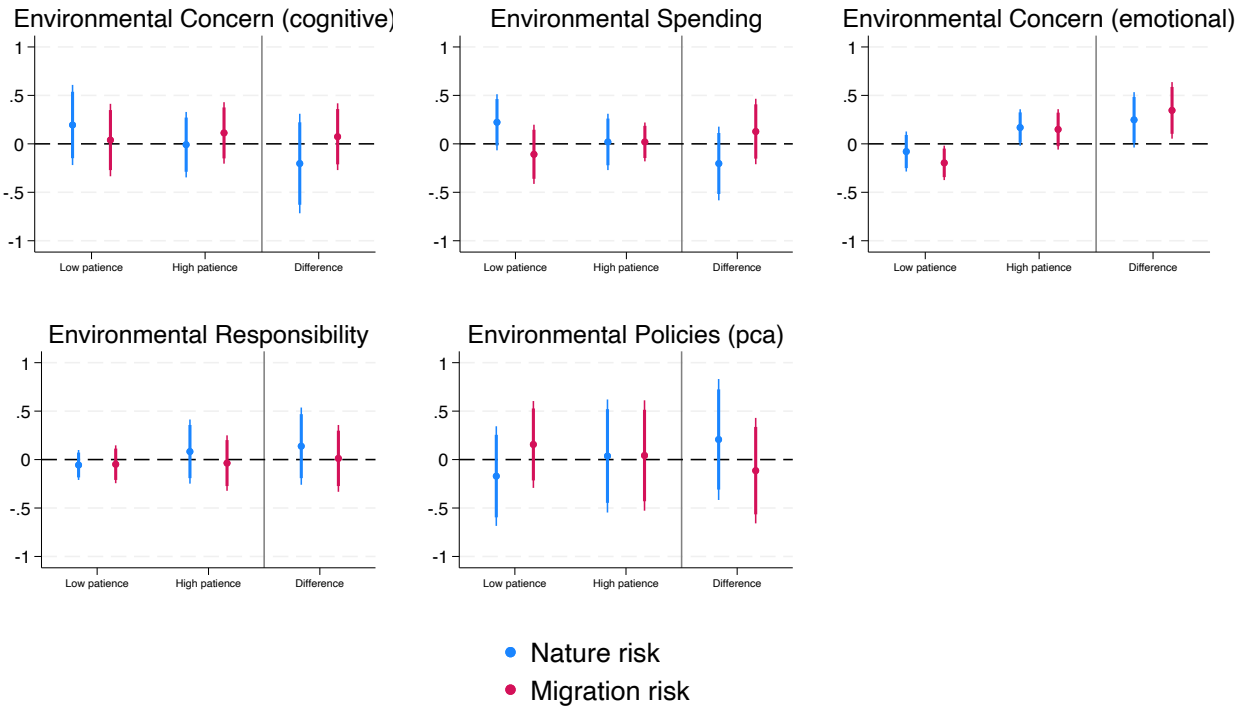
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) patience are those that prefer postponing earnings more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

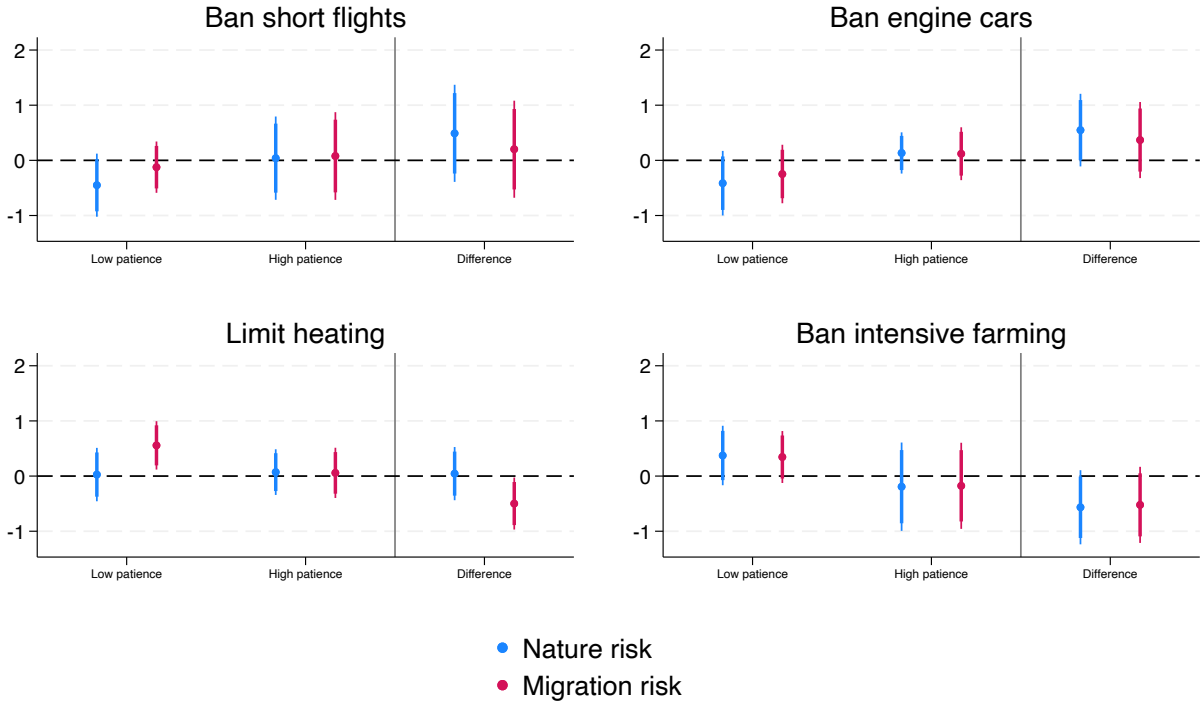
Figure B42. Treatments impact on CRSD game by time preferences.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) patience are those that prefer postponing earnings more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

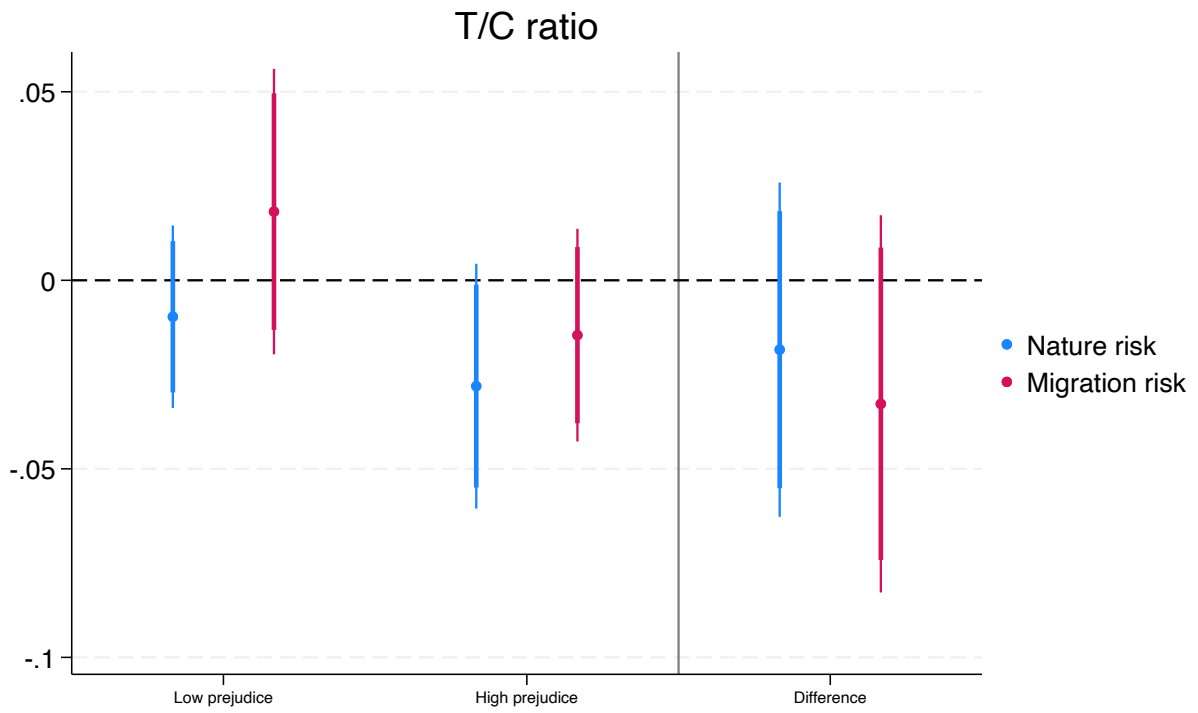
Figure B43. Impact of information podcasts on environmental attitudes, support for environmental policies by time preferences.





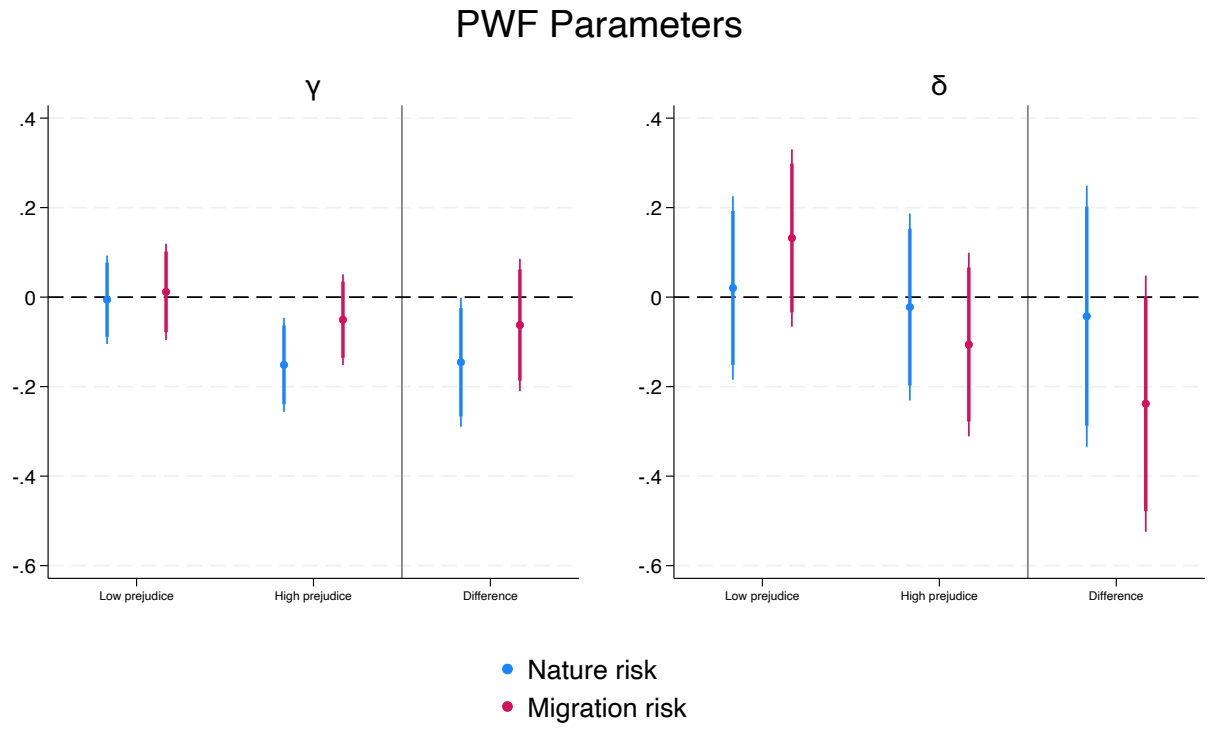
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) patience are those that prefer postponing earnings more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B44. Hormonal response to the treatments by immigration prejudice.



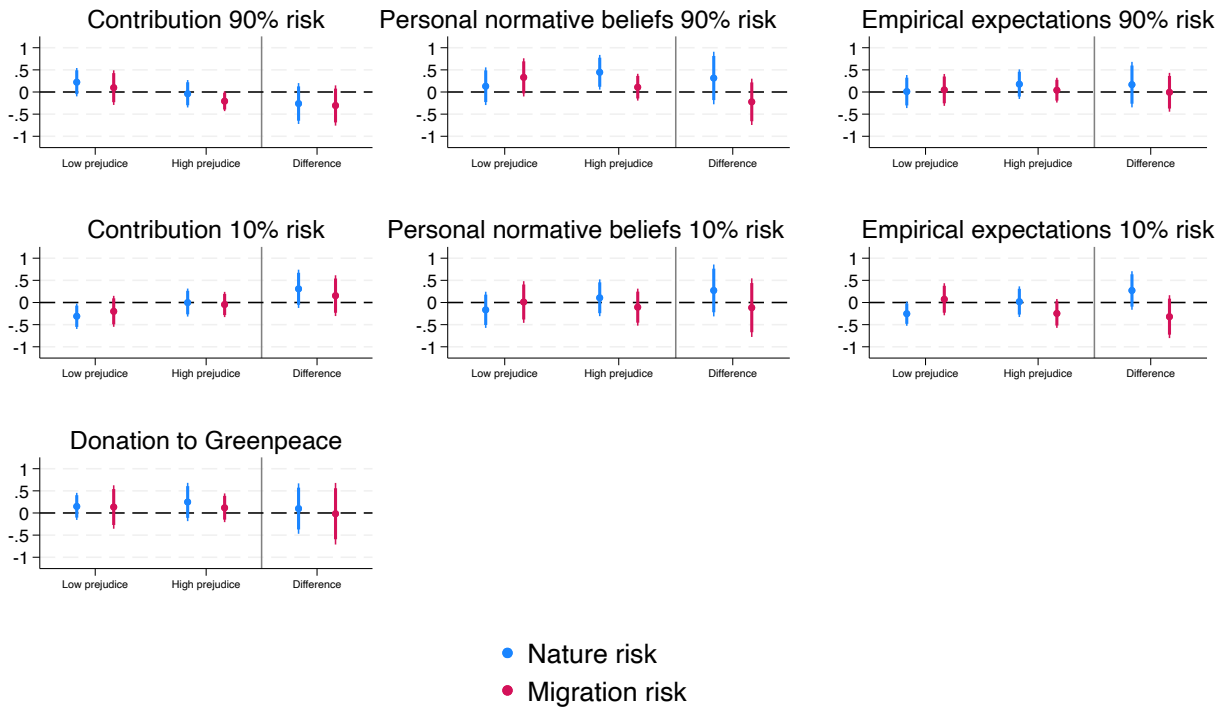
Notes: Coefficients from fe model. Errors are clustered at session level. Respondents with high (low) prejudice are those that have prejudice towards immigrants above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B45. Impact of treatments on PWF parameters by immigration prejudice.



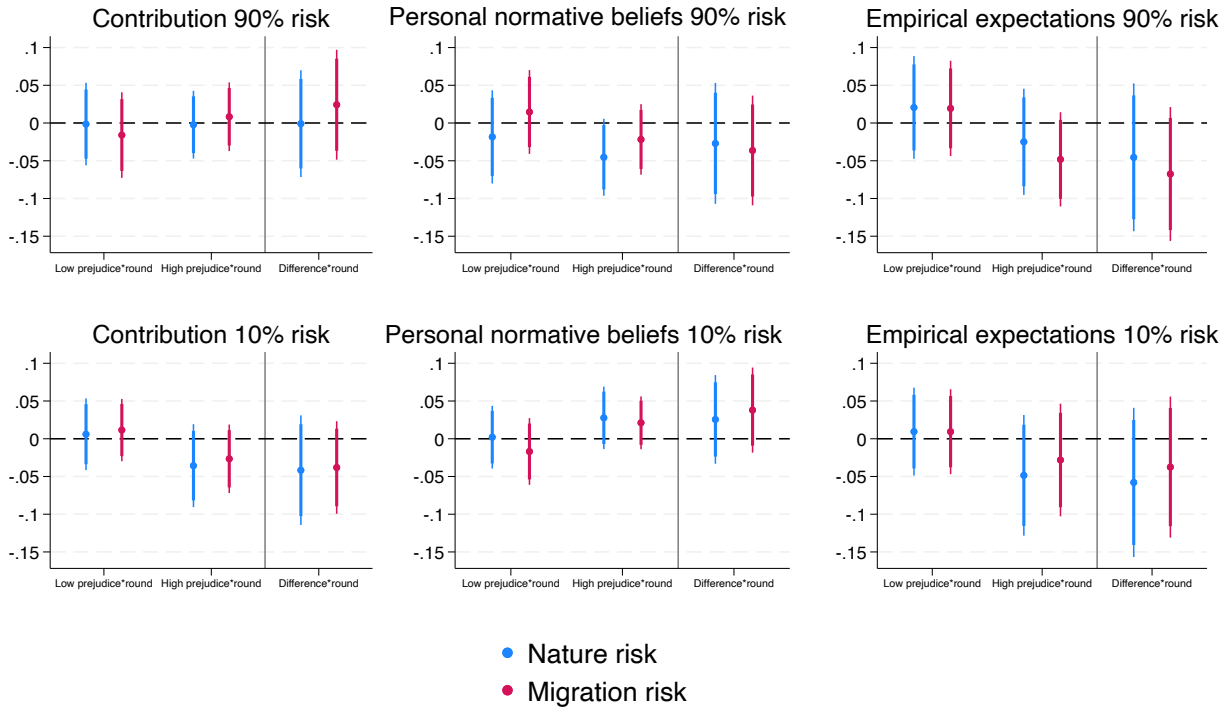
Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Respondents with high (low) prejudice are those that have prejudice towards immigrants above (below) than the sample median. Standard errors are clustered at the individual level.

Figure B46. Treatments impact on CDG and CRSD game by immigration prejudice.



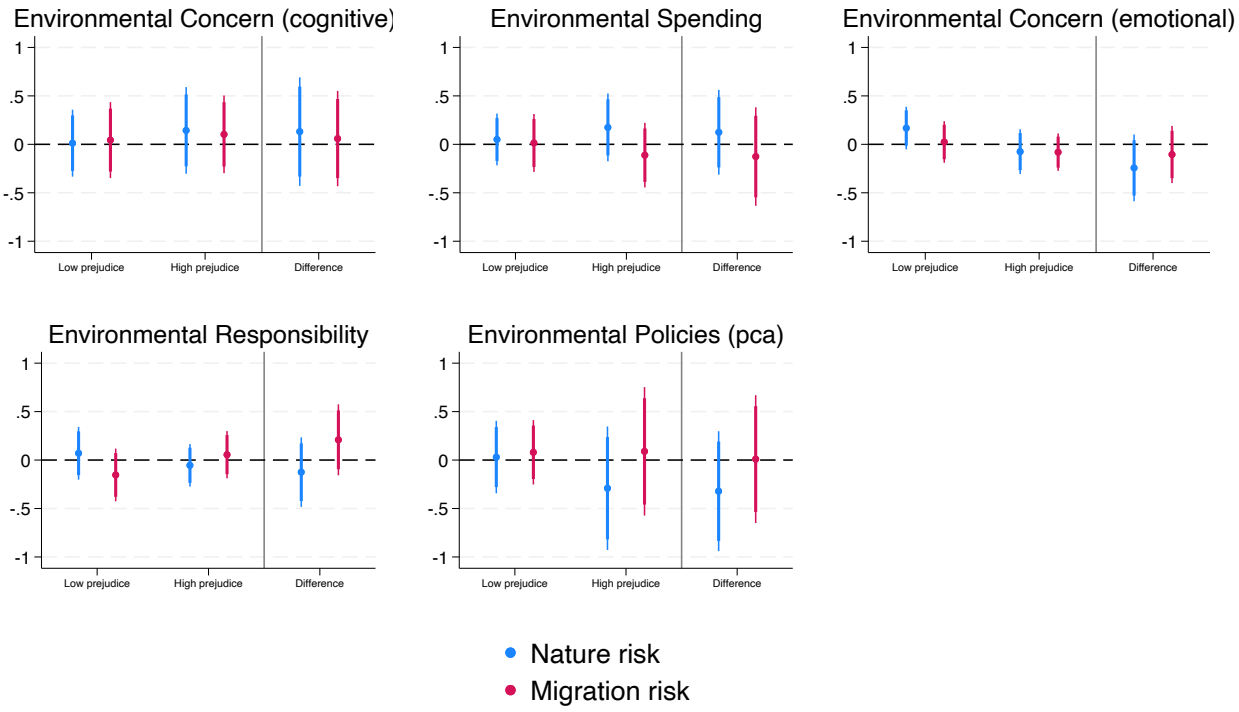
Notes: CDG model controls for environmental responsibility, emotional concern, climate change knowledge, age and gender. CRSD game models are random effect models including controls for age, gender, previous round payoff, game instructions randomization and time fixed effects. Respondents with high (low) prejudice are those that have prejudice towards immigrants above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

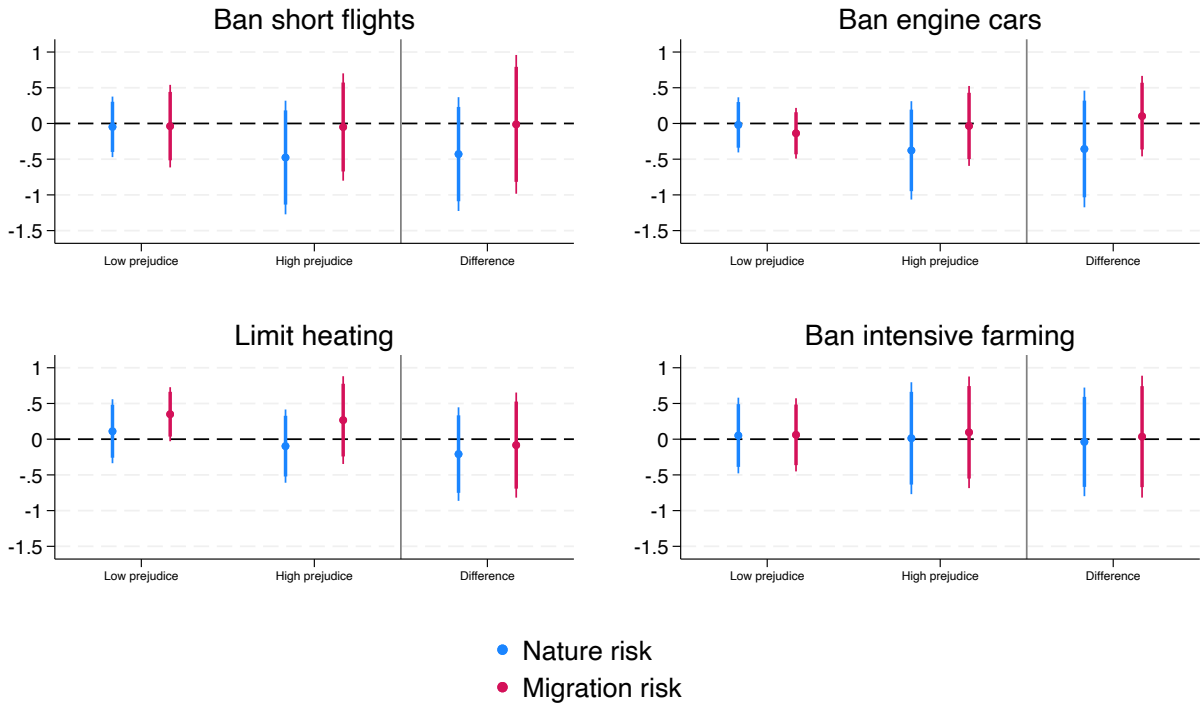
Figure B47. Treatments impact on CRSD game by immigration prejudice.



Notes: CRSD game models are fixed effect models controlling for previous round payoff. Respondents with high (low) prejudice are those that have prejudice towards immigrants above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the individual level.

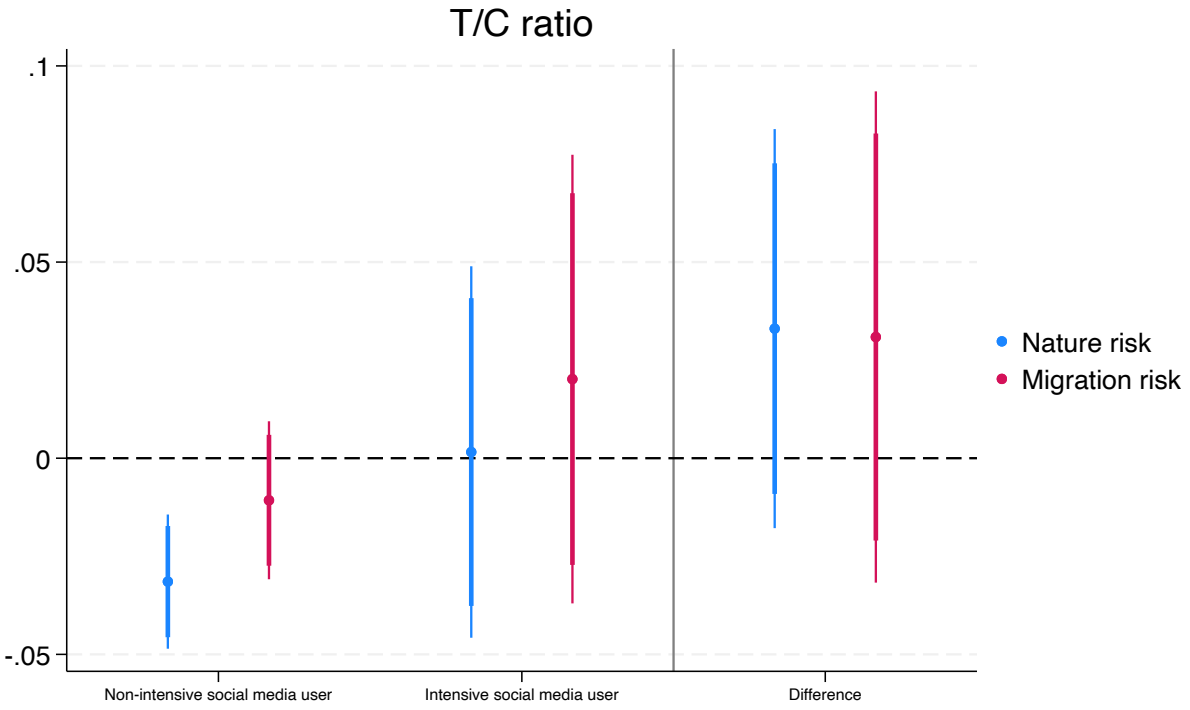
Figure B48. Impact of information podcasts on environmental attitudes, support for environmental policies by immigration prejudice.





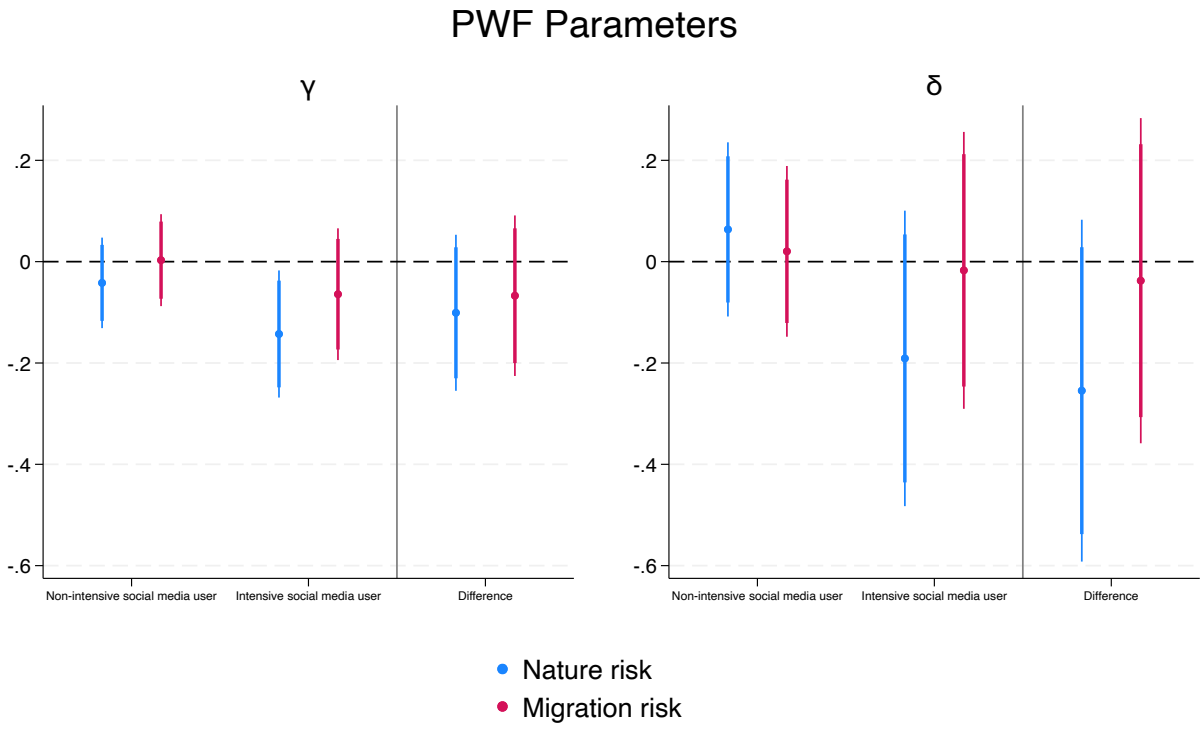
Notes: Regression coefficients for environmental attitudes control for age, gender, average payoff in the CRSD game, risk in the CRSD game and the value of the same variable in the pre-experimental survey. Regression for environmental policy support controls for age, gender, average payoff in the CRSD game and environmental concern (emotional) in the pre-experimental survey. Respondents with high (low) prejudice are those that have prejudice towards immigrants above (below) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B49. Hormonal response to the treatments by social media use.



Notes: Coefficients from fe model. Errors are clustered at session level. Intensive (non-intensive) social media users are those that use social media more (less) than the sample median. Outcome variables are standardized. Standard errors are clustered at the session level.

Figure B50. Impact of treatments on PWF parameters by social media use.



Notes: Marginal effects of the treatment from regression considering lotteries asked in the pre-experimental survey and in the lab. Intensive (non-intensive) social media users are those that use social media more (less) than the sample median. Standard errors are clustered at the individual level.

Section 3

Treatment Scripts

Control

“I moti della terra. La terra compie in totale 12 moti, ma i più importanti sono: il moto di rotazione, il moto di rivoluzione e i moti millenari. La terra compie un moto di rotazione intorno al proprio asse da ovest verso est. L’asse terrestre è un asse immaginario, inclinato rispetto al piano dell’orbita di rotazione, detto piano dell’eclittica. Il giorno solare è il tempo che la terra impiega per compiere un giro completo. Esistono diverse prove della rotazione terrestre. L’esperienza dell’abate Guglielmini. Egli, facendo cadere un corpo dall’alto della Torre degli Asinelli a Bologna, osservò che toccava il suolo con una deviazione verso est. L’esperienza del pendolo di Foucault. Il fisico Foucault osservò che le tracce scavate sulla sabbia, dalla punta di un pendolo in oscillazione, si spostavano gradualmente, deducendo che fosse il pavimento a spostarsi sotto la sabbia. La principale conseguenza del moto di rotazione terrestre è l’alternarsi del dì e della notte. In ogni momento la terra è per meta illuminata e per meta al buio separata da una fascia detta circolo di illuminazione. Il dì e la notte non si alternano con un passaggio brusco, ma per la presenza dell’atmosfera, assistiamo ai fenomeni dell’alba e del tramonto. Il sole sorge ad est e tramonta ad ovest in un moto apparente, che coinvolge anche le stelle. La forza di Coriolis modifica la traiettoria dei corpi in movimento deviandoli nell’emisfero boreale verso est e verso ovest nell’emisfero australe. La terra compie un moto di rivoluzione intorno al sole impiegando, per compiere un intero giro, un periodo detto anno solare. L’asse terrestre è inclinato sul piano dell’eclittica, questo fa sì che solo durante gli equinozi il dì e la notte hanno la stessa durata. Durante il solstizio d’estate nella calotta artica il dì dura 24 ore, mentre nella calotta antartica è sempre buio. La situazione opposta si verifica il solstizio d’inverno, nei giorni intermedi il dì e la notte hanno una diversa durata.”

“Earth's motions. The earth performs a total of 12 motions, but the most important are: the rotation, revolution, and the millennial motions. The earth rotates around its axis from west to east. The earth's axis is an imaginary axis, tilted with respect to the plane of the orbit of rotation, called the plane of the ecliptic. The solar day is the time it takes the earth to complete one full rotation. There are several proofs of the earth's rotation. Abbot Guglielmini's experience. He, dropping a body from the top of the Asinelli Tower in Bologna, observed that it touched the ground with an eastward deflection. Foucault's pendulum experience. The physicist Foucault observed that the tracks dug into the sand by the tip of an oscillating pendulum gradually shifted, inferring that it was the floor that moved under the sand. The main consequence of the earth's rotational motion is the alternation of night and day. At all times, the earth is half illuminated and half in darkness separated by a band called circle of illumination. Day and night do not alternate with an abrupt transition, but because of the presence of the atmosphere, we witness the phenomena of sunrise and sunset. The sun rises in the east and sets in the west in an apparent motion, which also involves the stars. The Coriolis force changes the trajectory of moving bodies by deflecting them in the northern hemisphere eastward and westward in the southern hemisphere. Earth revolves around the sun, taking a period called the solar year to complete a full revolution. The earth's axis is tilted in the plane of the ecliptic; because of this day and night have the same duration only during the equinoxes. During the summer solstice in the Arctic ice cap, sun shines 24 hours, while in the Antarctic ice cap it is always dark. The opposite situation occurs during the winter solstice; on the days in between, day and night have different durations.”

Nature risk treatment

Intro

“200 metri di lunghezza, 60 metri di altezza, 80 metri di profondità sono le dimensioni del blocco di ghiaccio che, alla velocità di 300 km/h, ha ucciso 11 persone e ferito altre 8, il 3 luglio 2022, sul ghiacciaio della Marmolada. Analizzando le immagini satellitari, gli scienziati hanno scoperto che il blocco di ghiaccio si è staccato a causa di un cedimento interno, in gran parte generato dalle temperature alte in modo anomalo della tarda primavera e dell'inizio dell'estate. Il caso della Marmolada non è isolato: tutti i ghiacciai del mondo, dall’Antartico alla Groenlandia, sono affetti dal fenomeno dello scioglimento. Gli scienziati non hanno dubbi: la causa è il cambiamento climatico. Secondo l’ultimo Report dell’IPCC (Intergovernmental Panel on Climate Change), le attività umane, principalmente attraverso le emissioni di gas a effetto serra, hanno inequivocabilmente causato il riscaldamento globale. Dal 2011 al 2020, La temperatura superficiale del pianeta ha superato di 1,1°C quella del periodo 1850-1900. Le emissioni di gas a effetto serra continuano ad aumentare a causa delle scelte di produzione e consumo altamente inquinanti. Conseguenze catastrofiche del cambiamento climatico si stanno verificando in tutto il pianeta. Ondate di calore, alterazioni nelle stagioni delle piogge. Cicloni in Europa, uragani negli Stati Uniti, incendi e alluvioni in Australia.”

“200 meters long, 60 meters high, and 80 meters deep are the dimensions of the ice block that killed 11 people and injured eight others on the Marmolada Glacier on July 3, 2022, at a speed of 300 km/h. Analyzing satellite images, scientists found that the ice block broke off due to internal failure, largely generated by abnormally high temperatures in late spring and early summer. The Marmolada case is not isolated: all the world's glaciers, from the Antarctic to Greenland, are affected by the melting phenomenon. Scientists have no doubt: climate change is the cause. According to the latest IPCC (Intergovernmental Panel on Climate Change) Report, human activities, mainly through greenhouse gas emissions, have unequivocally caused global warming. From 2011 to 2020, The surface temperature of the planet has exceeded that of the 1850-1900 period by 1.1°C. Greenhouse gas emissions continue to increase due to highly polluting production and consumption choices. Catastrophic consequences of climate change are occurring across the planet. Heat waves, changes in rain seasons. Cyclones in Europe, hurricanes in the United States, wildfires and floods in Australia.”

Nature risk

“Tutta la penisola italiana è colpita dal cambiamento climatico. Secondo lo European Drought Observatory, la desertificazione si sta espandendo a macchia d’olio: Abruzzo, Molise e Sicilia sono le regioni più a rischio, seguite da Toscana e Umbria. Queste condizioni estreme mettono in ginocchio le coltivazioni di frutta, verdura e cereali, i cui prodotti e derivati potrebbero scomparire definitivamente dai nostri scaffali. La siccità che ha colpito il Nord Italia negli ultimi 3 anni ha reso il terreno troppo secco e quindi non più in grado di assorbire le precipitazioni in modo efficace. Per questo, le piogge di maggio che hanno colpito l'Emilia-Romagna scorrevano lungo il terreno, causando allagamenti, straripamenti e frane che hanno coinvolto più di 100 comuni della regione, provocando 17 morti e più di 50.000 sfollati. Se da una parte le piogge torrenziali allagano alcune delle nostre regioni, in altre la mancanza d’acqua provoca una desolante aridità. Sono 40 i comuni piemontesi in cui, la scorsa primavera, sono state predisposte limitazioni dell’acqua per l’irrigazione dei giardini e per altri scopi al momento non prioritari. Inoltre, secondo il report annuale di Legambiente, lo scorso anno il Piemonte è stato colpito da intense ondate di calore che

hanno ucciso il 70% di persone in più rispetto alla media. In Italia, il numero di eventi estremi è aumentato del 55% tra il 2021 e il 2022. Immaginatevi il mondo tra 10 anni con un aumento costante a questo ritmo."
"The entire Italian peninsula is affected by climate change. According to the European Drought Observatory, desertification is spreading like wildfire: Abruzzo, Molise and Sicily are the most at risk, followed by Tuscany and Umbria. These extreme conditions are bringing fruit, vegetable and cereal crops to their knees, whose produce and derivatives could disappear from our fridge. The drought that has hit northern Italy over the past 3 years has made the soil too dry and therefore no longer able to absorb rainfall effectively. Because of this, the May rains that hit Emilia-Romagna were flowing along the ground, causing flooding, overflows and landslides that affected more than 100 municipalities in the region, resulting in 17 deaths and more than 50,000 people displaced. While torrential rains are flooding some of our regions, in others the lack of water is causing bleak aridity. There are 40 municipalities in Piedmont where water restrictions were in place last spring for garden irrigation and other non-priority purposes. In addition, according to Legambiente's annual report, last year Piedmont was hit by intense heat waves that killed 70% more people than average. In Italy, the number of extreme events increased by 55% between 2021 and 2022. Imagine the world in 10 years with a steady increase at this rate."

Migration risk treatment

Intro

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Migration risk
"Tuttavia, le nazioni più colpite dal cambiamento climatico sono le più vulnerabili: i Paesi sottosviluppati e in via di sviluppo. Questi territori non sono dotati delle risorse necessarie per affrontare questi eventi estremi; pertanto, le persone che vivono in tali Paesi hanno un'unica soluzione: fuggire. Secondo l'ISPI (Istituto per gli Studi di Politica Internazionale), nel continente africano i fenomeni climatici e meteorologici estremi costringono sempre più abitanti del Corno d'Africa a fuggire dalle loro abitazioni. I territori del Corno d'Africa sono caratterizzati da carestie, siccità, piogge torrenziali, inondazioni, aumento del livello del mare, che ciclicamente colpiscono centinaia di migliaia di somali e sudanesi. La World Meteorological Organization ha stimato che il tasso di aumento della temperatura in Africa è di circa 0,3 gradi centigradi al decennio tra il 1991 e il 2021, più veloce rispetto alla media globale. Inoltre, viene stimato che il cambiamento climatico indotto dall'uomo abbia reso doppiamente più probabili periodi siccitosi più estremi in Africa. Infine, i dati sull'immigrazione in Italia di migranti provenienti solo dal Corno d'Africa mostrano che nel 2017 l'Italia ha accolto sulle proprie coste oltre 44.000 eritrei e 40.000 sudanesi. A causa dei problemi climatici sempre più gravi nel continente africano, la migrazione verso l'Europa aumenterà, essendo la destinazione più prossima e favorita. In Italia, sia il numero di eventi estremi che di immigrati arrivati via mare è aumentato del 55% tra il 2021 e il 2022. Immaginatevi il mondo tra 10 anni con un aumento costante a questo ritmo."
"However, the climate change most affected nations are the most vulnerable: underdeveloped and developing countries. These territories are not equipped with the necessary resources to deal with these extreme events; therefore, people living in these countries have only one solution: to flee. According to the ISPI (Istituto per gli Studi di Politica Internazionale), on the African continent extreme weather and climate events are forcing more and more people from the Horn of Africa to flee their homes. The territories of the Horn of Africa are characterized by famines, droughts, torrential rains, floods, and rising sea levels, which cyclically affect hundreds of thousands of Somalis and Sudanese. The World Meteorological Organization has estimated that the rate of temperature increase in Africa is about 0.3 degrees Celsius per decade between 1991 and 2021, faster than the global average. In addition, human-induced climate change is estimated to have made more extreme drought periods in Africa twice as likely. Finally, data on the immigration to Italy of migrants from the Horn of Africa alone show that in 2017 Italy welcomed more than 44,000 Eritreans and 40,000 Sudanese to its shores. Due to increasing climate problems on the African continent, migration to Europe will increase, as it is the closest and most favored destination. In Italy, both the number of extreme events and migrants arriving by sea increased by 55% between 2021 and 2022. Imagine the world in 10 years with a steady increase at this rate."

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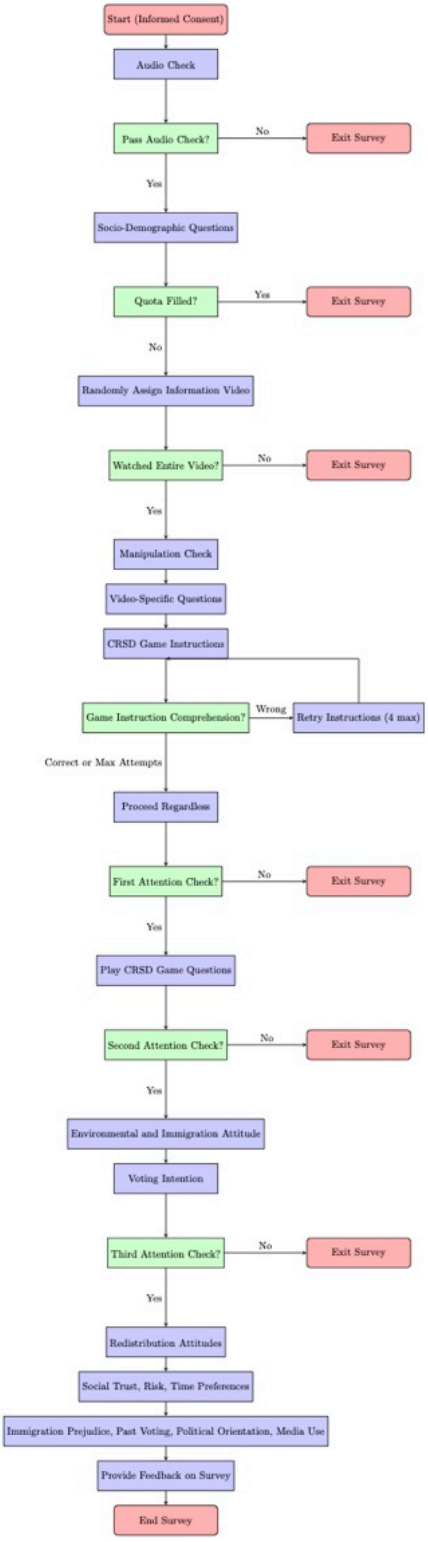
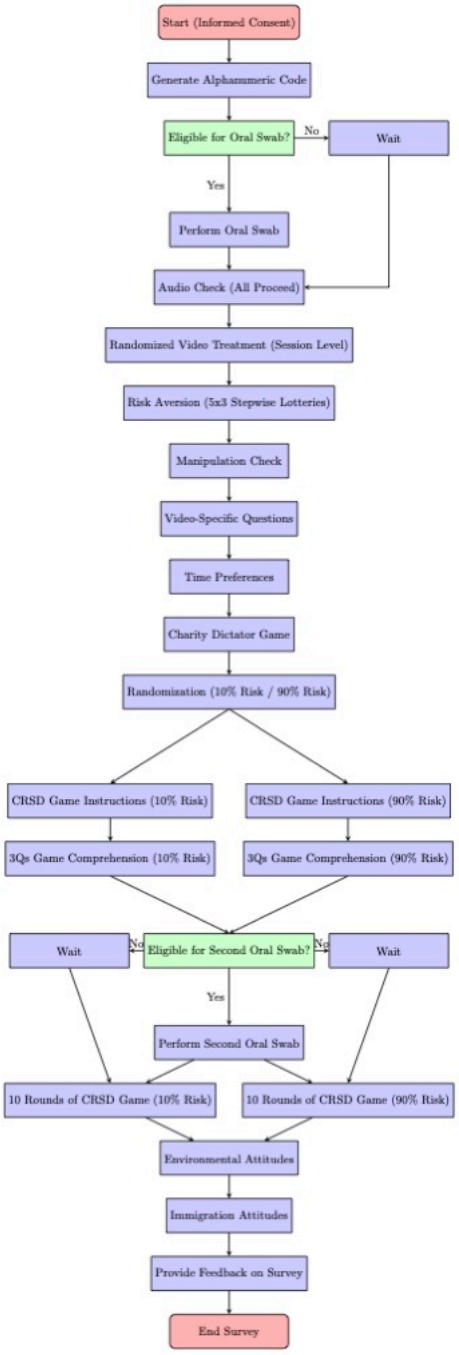
Experimental Design

Study 1



Study 2 – Pre-experimental survey

Study 2 – Lab experiment



Saliva Sample Collection and Storage

Saliva was collected twice for each subject: the 'baseline' sample was collected at the beginning of the experiment and the 'post-stimulus' sample was collected after watching the video, completing the Charity Dictator Game, lottery and time preferences tasks (approximately 15 minutes after watching the video-podcast).

Participants to the study were kindly invited not to eat, smoke, drink or wash their teeth in the 30 minutes and not to do strong exercise in the 2 hours that preceded the saliva collection. They were also asked to communicate the use of therapeutic drugs, especially in the case of hormonal drugs, such as contraceptives, corticosteroids and
anabolic steroid drugs.

Saliva samples were collected by using the SalivaBio Oral Swab from Salimetrics (Salimetric LLC, CA, USA) and following supplier's instructions. In detail, each subject was requested to put the swab under the tongue for 3 minutes, place the swab in the upper part of the collector and close it. Collected samples were immediately refrigerated at 4°C and transported to the laboratory where they were stored at -20°C. For the analysis, samples were thawed at room temperature, centrifuged for 15 minutes at 2000 x g the resulting saliva extract was subjected to ELISA determination without any further treatments.

Commercial ELISA kits validated for measuring cortisol and testosterone in saliva of humans were used [https://www.ibl-international.com/en/cortisol-saliva-elisa; https://www.ibl-international.com/en/testosterone-testosteron-saliva-elisa].

Section 4

Using data from Study 1 we validate the three treatment conditions ('nature risk', 'migration risk' and 'nature + migration risk'). During the online survey, after respondents watched the video, they were asked a manipulation check question (which was the same for all treatments) asking to flag all information contained in the video from a list of 10 possible topics. These topics were:

1. Consequence of the Russo-Ukranian war on migration;
2. Climate change;
3. Climate disasters in Italy;
4. Ukraine joining Nato;
5. Climate disasters out of the EU;
6. Consequences of the Russo-Ukranian war on European economy;
7. Causality between climate change and natural disasters;
8. Impact of climate change on migration;
9. Inflation;
10. Earth motion.

We report the content of the three information video podcast in SM2. Here we summarize which of these topics are included in the different videos. The active control video includes only information 10. Whereas, the 'nature risk' treatment focuses on 2, 3, 7 but mentions 5 as well. The 'migration risk' treatment covers 2, 7, 8, and mentions 3 (the Marmolada accident) and 5. Finally, the 'nature + migration risk' treatment is focused on 2, 3, 7, 8, and mentions 5.

As it is possible to observe from the next Tables C1-C4, only 3.89% of respondents in the control group make mistakes in recognizing the topics included in their video podcast. However, this percentage becomes far larger for the three treatment videos getting to 85.42%, 77.39%, and 66.09%. A deeper analysis reveals that most of mistakes come from topic 7, probably because most respondents have poor understanding of the concept of 'causality', and topic 5, which is loosely mentioned in the podcasts. Moreover, in the 'migration risk' treatment many respondents does not identify topic 3, which is also in this case loosely mentioned.

Table C1. Topic recognition for respondents in the control group (Study 1).

Topic	(1) Ukraine migration	(2) Climate Change	(3) Disasters in Italy	(4) Ukraine in Nato	(5) Disasters extra-EU	(6) Ukraine economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**
Correct	256 (99.61%)	249 (96.89%)	253 (98.44%)	256 (99.61%)	255 (99.22%)	256 (99.61%)	254 (98.83%)	256 (99.61%)	256 (99.61%)	251 (97.67%)	**247 (96.11%)**
Not correct	1 (0.39%)	8 (3.11%)	4 (1.56%)	1 (0.39%)	2 (0.78%)	1 (0.39%)	3 (1.17%)	1 (0.39%)	1 (0.39%)	6 (2.33%)	**10 (3.89%)**

Notes: This table includes all 1,036 respondents who had access to audio, watched the video podcast in full, did pass all three embedded attention checks, had reasonable completion times.

Table C2. Topic recognition for respondents in the 'nature risk' group (Study 1).

Topic	(1) Ukraine migration	(2) Climate Change	(3) Disasters in Italy	(4) Ukraine in Nato	(5) Disasters extra-EU	(6) Ukraine economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**	**Reasonable mistakes**
Correct	288 (100%)	252 (87.5%)	232 (80.56%)	288 (100%)	63 (21.88%)	288 (100%)	174 (60.42%)	279 (96.88%)	288 (100%)	286 (99.31%)	**42 (14.58%)**	**206 (71.53%)**
Not correct	0 (0%)	36 (12.5%)	56 (19.44%)	0 (0%)	225 (78.12%)	0 (0%)	114 (39.58%)	9 (3.12%)	0 (0%)	2 (0.69%)	**246 (85.42%)**	**82 (28.47%)**

Notes: This table includes all 1,036 respondents who had access to audio, watched the video podcast in full, did pass all three embedded attention checks, had reasonable completion times.

Therefore, we elaborate, for the three treatments, an alternative measure of video-podcast comprehension which jointly considers the topics identified by the respondents. In particular, we check if respondents correctly identify the main information we wanted to deliver in the video-podcast:

1) In the 'nature risk' treatment when she does not indicate 1, 4, 6, 8, 9, 10, and indicates 3 and either 2 or 7;
2) In the 'migration risk' treatment when she does not indicate 1, 4, 6, 9, 10, and indicates 8 and either 2 or 7;
3) In the 'nature + migration risk' treatment when she does not indicate 1, 4, 6, 9, 10, and indicates 3 and 8, plus either 2 or 7.

Using this specification, we get a lower and more reasonable number of excluded participants due to poor treatment comprehension: 28.47% in the 'nature risk' group, 31.03% in the 'migration risk' treatment, and 39.13% for the complete treatment.

Table C3. Topic recognition for respondents in the 'migration risk' group (Study 1).

Topic	(1) Ukraine migration	(2) Climate Change	(3) Disasters in Italy	(4) Ukraine in Nato	(5) Disasters extra-EU	(6) Ukraine economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**	**Reasonable mistakes**
Correct	259 (99.23%)	235 (90.04%)	124 (47.51%)	260 (99.62%)	160 (61.30%)	260 (99.62%)	151 (57.85%)	195 (74.71%)	259 (99.23%)	259 (99.23%)	**59 (22.61%)**	**180 (68.97%)**
Not correct	2 (0.77%)	26 (9.96%)	137 (52.49%)	1 (0.38%)	101 (38.70%)	1 (0.38%)	110 (42.15%)	66 (25.29%)	2 (0.77%)	2 (0.77%)	**202 (77.39%)**	**81 (31.03%)**

Notes: This table includes all 1,036 respondents who had access to audio, watched the video podcast in full, did pass all three embedded attention checks, had reasonable completion times.

Table C4. Topic recognition for respondents in the 'nature + migration risk' group (Study 1).

Topic	(1) Ukraine migration	(2) Climate Change	(3) Disasters in Italy	(4) Ukraine in Nato	(5) Disasters extra-EU	(6) Ukraine economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**	**Reasonable mistakes**
Correct	229 (99.57%)	209 (90.87%)	183 (79.57%)	230 (100%)	129 (56.09%)	230 (100%)	144 (62.61%)	170 (73.91%)	230 (100%)	224 (97.39%)	**78 (33.91%)**	**140 (60.87%)**
Not correct	1 (0.43%)	21 (9.13%)	47 (20.43%)	0 (0%)	101 (43.91%)	0 (0%)	86 (37.39%)	60 (26.09%)	0 (0%)	6 (2.61%)	**152 (66.09 %)**	**90 (39.13%)**

Notes: This table includes all 1,036 respondents who had access to audio, watched the video podcast in full, did pass all three embedded attention checks, had reasonable completion times.

To improve our evaluation of the video-podcast comprehension, we changed the comprehension questions for the lab experiment. We rephrased topic 7 by excluding the word "causality" from the question, paraphrasing the concept. Moreover, we changed the non-related items to something that is more politically neutral than the Russo-Ukrainian war. This, combined with the stronger attention of lab participants, results in extremely low values of mistakes in identifying the correct topics of the video-podcasts in Study 2. The manipulation check question, used in the lab experiment to check respondents understanding of the topics discussed in the video treatments, included the following list of 10 possibilities (students could flag more than one answer):

1. Consequences of the merging between Lufthansa and Ita on migration;
2. Climate change;
3. Climate disasters in Italy;
4. Romania joining Schengen;

5. Climate disasters out of the EU;
6. Economic consequences of seasonal sales;
7. Causality between climate change and natural disasters;
8. Impact of climate change on migration;
9. Inflation;
10. Earth motion.

Table C5-7 show how many respondents per group correctly identify the topics in the treatment videos. In general, we can observe that lab participants make less mistakes than online respondents. However, as topic 5 is only loosely mentioned participants still struggle to identify it: only 21.57% of respondents correctly identify it in the 'nature risk' group. Similarly, topic 3 is correctly identified in the 'migration risk' treatment by only 54.38% of respondents. Using the same measures of video comprehension as in Study 1, 96.08% of 'nature risk' treatment respondents qualify as attentive respondents, followed by 94.38% of respondents in the 'migration risk' group. 96.88% of respondents pass the video comprehension questions in the control group.

Table C5. Topic recognition for respondents in the control group (Study 2).

Topic	(1) Ita-Lufthansa migration	(2) Climate Change	(3) Disasters in Italy	(4) Romania in Schengen	(5) Disasters extra-EU	(6) Sales economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**
Correct	160 (100%)	155 (96.88%)	160 (100%)	160 (100%)	160 (100%)	160 (100%)	159 (99.38%)	160 (100%)	160 (100%)	160 (100%)	**155 (96.88%)**
Not correct	0 (0%)	5 (3.12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.62%)	0 (0%)	0 (0%)	0 (0%)	**5 (3.12%)**

Notes: This table includes all 473 respondents who participated to the lab sessions.

Table C6. Topic recognition for respondents in the 'nature risk' group (Study 2).

Topic	(1) Ita-Lufthansa migration	(2) Climate Change	(3) Disasters in Italy	(4) Romania in Schengen	(5) Disasters extra-EU	(6) Sales economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**	**Reasonable mistakes**
Correct	153 (100%)	150 (98.04%)	148 (96.73%)	153 (100%)	33 (21.57%)	153 (100%)	152 (99.35%)	153 (100%)	153 (100%)	152 (99.35%)	**31 (20.26%)**	**147 (96.08%)**
Not correct	0 (0%)	3 (1.96 %)	5 (3.27%)	0 (0%)	120 (78.43%)	0 (0%)	1 (0.65%)	0 (0%)	0 (0%)	1 (0.65%)	**122 (79.74%)**	**6 (3.92%)**

Notes: This table includes all 473 respondents who participated to the lab sessions.

Table C7. Topic recognition for respondents in the 'migration risk' group (Study 2).

Topic	(1) Ita-Lufthansa migration	(2) Climate Change	(3) Disasters in Italy	(4) Romania in Schengen	(5) Disasters extra-EU	(6) Sales economy	(7) Causality CC-disasters	(8) CC migration	(9) Inflation	(10) Earth motion	**All correct**	**Reasonable mistakes**
Correct	160 (100%)	154 (96.25%)	87 (54.38%)	160 (100%)	124 (77.50%)	160 (100%)	149 (93.12%)	155 (96.88%)	160 (100%)	159 (99.38%)	**75 (46.88%)**	**151 (94.38%)**
Not correct	0 (0%)	6 (3.75 %)	73 (45.62%)	0 (0%)	36 (22.50 %)	0 (0%)	11 (6.88%)	5 (3.12%)	0 (0%)	1 (0.62%)	**85 (53.12%)**	**9 (5.62%)**

Notes: This table includes all 473 respondents who participated to the lab sessions.