GRAPE Working Paper #91

Empathy in risky choices regarding others

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FAME | GRAPE, 2023

Foundation of Admirers and Mavens of Economics
Group for Research in Applied Economics

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Abstract

One of the assumptions of the affective empathy theory is that individuals have consistent preferences over outcomes. However, there is empirical evidence showing violation of such assumption. In particular, in *Asian disease* experiment subjects are more likely to choose risky over safe rescue plan (with the same expected outcome) under loss than under gain framing. In this study, we induce empathy in the *Asian disease* study to test whether providing sympathetic or antipathetic relationship between decision-maker and the others affect the size of the framing gap (GvL gap). We find that inducing affection leads to reduction of the gap.

Keywords:

Affect empathy, Asian disease problem, empathetic altruism

JEL Classification

D64, C93, D91

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Acknowledgements

The experiment was approved by the GRAPE Ethics Board on 26.06.2023 (decision #4/2023). The experiment was pre-registered in the AEA RCT Registry (# AEARCTR-0011514). This research is supported by National Science Center (grant no. 2019/33/B/HS4/00151). Maros Servatka, Jose Vasquez, Joanna Tyrowicz provided valuable comments on earlier versions of this paper. The remaining errors are ours.

Published by: FAME | GRAPE
ISSN: 2544-2473

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1 Introduction

This paper revisits the gain-loss framing in the context of affective empathy. With altruism the decision-maker optimizes the welfare of others, adopting their perception of material outcomes. This suggests that individuals have consistent preferences over outcomes and implement them rationally. However, in the *Asian Disease* problem (Tversky and Kahneman, 1981) individuals exhibit inconsistent preferences: their preference for a risky option differs depending on whether they are given a gain framing or a loss framing. This implies that the preferences of individuals are not well-defined and biases emerge, such as gain vs loss gap (henceforth: GvL gap). Vasquez and Weretka (2020) make a case for empathetic preferences. They argue that with affective empathy the preferences depend additionally on the degree of affect.

We propose a variant of the *Asian Disease* problem (Tversky and Kahneman, 1981). In an online experiment, the participants are deciding about an inconvenience for other individuals. We ask participants to choose between the options for the maintenance of the water infrastructure, where we deploy a gain framing and a loss framing. To invoke empathy, we ask participants to make the choice in three contexts, defined by the type of relationship between the participant and the residents. In the first context, we emphasize that the participant sympathizes with the residents (we invoke friendly interactions), whereas in the second context, we emphasize that the relationship with the residents is antipathetic (the residents cause troubles). There is a null context when no information about the affect is provided. To distinguish between the effect of the empathy and social distance, we add to the description that the residents are either considered as strangers or acquaintances. We thus have three levels of within-subject variation (each participant considers a null condition of no affect, positive affect and negative affect) and 2×2 between-subject variation (gain vs loss framing, and strangers vs acquaintances).

This experimental design is intended to tease out the role of affective empathy in GvL gap. We posit, drawing from Vasquez and Weretka (2020), that empathy reduces the GvL gap, bringing choices closer to well-defined preferences. By contrast, in the control condition our subjects should display GvL gap in line with the literature.

Admittedly, our design is mild: we ask the participants to *imagine* a relationship with the hypothetical residents, and we have no means of rewarding them for actually taking the mental effort to take the treatment to heart. Thus, our design biases the results towards null. In addition, if paternalistic altruism dominated empathetic altruism, participants will display a similar GvL gap in empathetic treatments as in the control condition.

Our findings show that invoking affective empathy changes the choices made by participants. We demonstrate a reduction in GvL within-subjects, for both positive and negative affect. This result is not driven by social distance, because we find the decline in GvL gap even in those conditions, where participants evaluated strangers. We show that these results are robust to individual risk preferences.

Our paper is structured as follows. We discuss the relevant literature in section 2. In section 3, we present the design of our experiment, and in the section 4 we describe subjects' sample. We present results in section 5. We also provide a discussion of the results and limitations of the study in the section 6. Section 7 concludes with implications of our study.

2 Literature review

Individuals are more likely to choose a risky option in loss framing and a safe option in gain framing in high-uncertainty situations, while they prefer risky choices in gain framing and safe choices in loss framing in high-certainty situations (Scholten and Read, 2014). This pattern was demonstrated to be robust when one makes choices about themselves, but they do not replicate always in choices on behalf of others. Indeed, the risk attitudes are less stable than psychological traits (Weber et al., 2002; Beyer et al., 2015), and vary based on factors such as the stakes involved (Fehr-Duda et al., 2010), elicitation methods (Eriksen et al., 2020), and the target of the decisions (Fareri et al., 2022).

Meanwhile, choices under uncertainty in the name of someone else are relatively frequent. It is generally believed that these decisions are made in the best interest of the affected parties (Sunstein and Thaler, 2003). In parallel to decisions about own well-being, paternalistic decisions are notoriously subject to gain-loss framing bias (that is the GvL gap, Tversky and Kahneman, 1981; Scholten and Read, 2014). Numerous studies have documented that gain and loss framing affects the risky decisions on the part of others (Polman and Wu, 2020).

The literature on the probability of choosing risky option in the *Asian disease* problem is quite rich (Raue et al., 2015; Polman and Wu, 2020). However, it is not conclusive on the mechanism behind the GvL gap. One potential explanation is the affect and distance. The literature on affect and GvL gap demonstrates that people respond stronger to a friend's gain or loss in comparison to strangers (Ma et al., 2011), although the patterns of joy and pain differ (Andreychik, 2019; Liu et al., 2020).[1] The literature finds favoritism towards close ones over strangers (Moreira et al., 2021; Sun et al., 2017). Social distance attenuates both positive and negative affect (McGraw et al., 2012; Williams et al., 2014). In fact, it appears that GvL gap is smaller in the context of decisions regarding others, when compared to decisions concerning oneself (Zhang et al., 2017). Similarly, the GvL gap is smaller when the decision is made for distant others than close others, independently from additional experimental treatments (e.g. anxiety traits) (Xu and Huang, 2022; Sun et al., 2017).

The finding that affective empathy influences the decision making appear to have strong biological foundations. Neuro-imaging studies revealed that different areas of brain are activated when choices are made about individuals who we feel close to as opposed to distant people (Jung et al., 2013). In recent imaging it was demonstrated that distinct synchronization patterns emerge (Zhao et al., 2023).

Our contribution The focus of the existing literature is to study the role of spacial and societal distance in risky choices. Studies compare if choices under uncertainty pertaining to self are different than choices pertaining to others. Our focus is to study the GvL gap. Some studies suggest that remoteness from self can affect the disparity between the loss and the gain framing. Furthermore, the predictions from the prospect theory are not consistently proven by empirical evidence. We posit that affective empathy can help explaining the conflicting evidence in existing experimental studies.

To be able to compare our results to the existing literature, we employ the *Asian disease* problem of Tversky and Kahneman (1981). We keep the spatial distance constant for each subject and instead focus

[1] More affective empathy is associated with a greater emotional reaction when observing the gains or losses of the others (Andreychik and Migliaccio, 2015). However, it seems that empathizing with the negative experiences of others appears to be easier than with the positive experiences (Ma et al., 2011; Nahum et al., 2011).

on sympathetic/antipathetic affect as opposed to no affect.

We make the GvL framing an element of the between-subject variation; it is randomly assigned to the participants. We shift the focus of the within-subject variation to the affect with the objective to explore the potential for empathetic altruism to drive individual choices.

Empathy is activated in relation to those with positive relationships (De Waal, 2008) and is suppressed or turned into "Schadenfreude" when it is with whom we have a negative relationship. We invoke both positive and negative affect (Israelashvili et al., 2020; Davis, 1983; Walter, 2012) and compare the choices to the cases when we either do not invoke empathy at all, which is our control condition for each participant. Therefore, while our study is related to Raue et al. (2015), the underlying theoretical framework and the research questions differ. Indeed, we argue that empathy reduces the GvL gap.

This conjecture draws from Vasquez and Weretka (2020) and the concept of empathetic preferences as opposed to prospect theory. Note that under prospect theory the GvL emerges as an outcome of incomplete rationality. Rational individuals with well-defined preferences should make identical choices under loss framing as under gain framing. Emergence of GvL gap thus demonstrates departure from rational preferences. Affective empathy may reduce GvL if it makes individuals resort to return to optimization in the place of instinctive reactions.

3 Experimental design

We offer an online experiment. All subjects come from Poland. Our experiment is a modification of *the Asian disease problem* by Tversky and Kahneman (1981). The participants are requested to take on the role of a building administrator. The building will have to undergo a renovation of the water supply system, which could cause disruption for the inhabitants during the maintenance period.

We study the context of affect. We propose within-subject variation in affect towards building residents. We relate to the existing literature by including between-subject variation in GvL as well as between-subject variation in social distance between subject and the residents. We describe below design, implementation, the analysis plan (with hypotheses), and the model to be estimated.

Design Participants are informed that the community they manage will experience interruptions in the supply of water due to maintenance. Participants receive the instructions as follows.

> *Please, imagine that you administer a building. The building has to undergo a renovation involving water supply interruptions.*

The participants are asked to choose between two maintenance programs: one involving uncertainty and one with certain outcomes. The participants are randomly assigned to a gain framing or a loss framing at this stage. The gain versus loss framing is the first dimension of the between-subject variation. Programs A and X offer no risk. Programs B and Z have the same expected outcome as A and X, but involve risk.

	Gain framing	Loss framing
	Program A	**Program X**
Not risky	250 households (out of 1000) will have water supply throughout the whole day	750 households (out of 1000) will lose water for 8 hours a day
	Program B	**Program Z**
Risky	with a probability of 1/4 all 1000 households will have water supply throughout the whole day and with a probability of 3/4 no household will have water supply for 8 hours	with a probability of 1/4 none of 1000 households will lose water, and with probability of 3/4 all households will lose water for 8 hours a day

We verify if the framings were clear by the means of manipulation check questions. We ask the meaning of the term "probability" in comparing the programs within each framing. We test if the participants understand that both programs have the same payoff by asking about the probability of having access to heating in both programs. Only the subjects who answer the manipulation check questions correctly, were allowed to participate in the experiment.

The within-subject variation concerns empathy: no affect, sympathetic affect, and antipathetic affect. The case of no affect is the control question for each participant and is asked always as the first one. In this condition we state explicitly:

> ***Control condition*** *You do not know the residents of this building.*

Subsequently, subject in our study are asked to choose a plan for the housing unit, as if they know the residents. We offer two contexts.

> ***Sympathetic affect*** *You have great sympathy for the residents of that building, and you meet them from time to time to talk about important community issues.*
> ***Antipathetic affect*** *Your interactions with residents are limited to resolving conflicts, dealing with their constant problems and listening to complaints.*

The social distance is the final dimension of the between-subject variation. We consider two levels: acquaintances versus strangers. Social distance is thus introduced by the means of explaining the depth of the relationship with the inhabitants.

Acquaintances	***Strangers***
You know well all of the residents. You are on a first-name basis with them.[2]	*You don't know the residents well, they are practically strangers to you.*

The participants are asked verification questions in which they define the closeness of the relationship with residents using Gächter et al. (2015) scale.

Summarizing, we adopt a $3 \times 2 \times 2$ mixed design. We have three levels of the within-subject variation, with no affect as a control condition, and two levels of treatment conditions: sympathy and antipathy. Participants receive those treatments in a random order to mitigate the ramifications of the order of asking them to evaluate the three situations. The participant are randomly assigned to one of the four groups, defined by social distance (two levels: acquaintances and strangers) and the GvL framing (also two levels).

[2]We implement our experiment in Poland. In Polish culture, third-person singular forms are commonly used to address adults. This is very similarly to Francophone or Germanic languages, where third-person plural is used. Addressing people with a direct Anglosaxon *you* is considered highly impolite unless it is properly agreed upon in advance. Being in a first-name basis is rare and signifies fraternity far exceeding business relationships.

We collect three answers from each participant, which are evenly distributed across four groups defined by framing and social distance.

Other questions We measure individual risk preference of the participants using Holt and Laury (2002) design.[3] Participants provided their answers before any treatment. Participants had also the opportunity to describe what they though was the topic of this experiment. Finally, we ask participants' age, gender and size of their place of residence. This was the last part of the experiment.

Implementation The study was implemented between October 2023 and March 2024. The experiment was implemented using an Answeo online experiment platform.[4] On average, it took the participants 8 minutes to complete the study. Each participant was compensated for completing the survey with 2 USD.

Not all of the responses must be relevant in addressing our research question. First, we recognize subjects who are not responsive to the treatments. Individuals, who are always risk-averse, choose a safe plan in water supply experiment no matter what treatment they are faced with. They provide little variation in answering our research questions. The situation is similar for the risk-loving individuals who always choose a risky option in the experiment. The individuals who always choose one option, which is in contrast with their own risk preferences are likely insufficiently attentive or driven by motivations beyond the scope of our analysis. We summarize potential answers of the participants in water supply experiment in Table 1.

Table 1: Potential answers of the participants in water supply experiment

Potential responses	our modified *Asian Disease* experiment: neutral	sympathy	antipathy	Holt & Laury (individual)	Explanation
Participants providing relevant identification in our analysis:					
	risky/not risky	not risky	risky	all	valid for testing hypotheses
	risky/not risky	risky	not risky	all	valid for testing hypotheses
	risky	not risky	not risky	all	valid for testing hypotheses
	not risky	risky	risky	all	valid for testing hypotheses
Participants not providing relevant identification in our analysis:					
Always not risky	not risky	not risky	not risky	risk-averse	non-responsive to treatment
Always risk	risky	risky	risky	risk-lover	non-responsive to treatment
	risky	risky	risky	risk-averse/neutral	non-responsive to treatment,
	not risky	not risky	not risky	risk-lover/neutral	inattentive, etc.

In testing hypotheses and estimations we focus on the subsample of subjects who choose different plans in two different treatments. We thus report the results for the full sample and for the subsample where responses of the participants are valid for testing our hypotheses.

The main study was preceded by two prestudies. The first one was implemented in January 2021 and concerned maintenance of the heating system (January is a winter month in Poland). It was implemented with $N = 100$ subjects. This prestudy allowed us to test the size of the effect in order to perform a power analysis for the main study. Simulation indicated that for a regression design, to detect a significant increase in the probability of choosing the risky option in empathetic relationships compared to neutral condition with a confidence level of 98%, a minimum sample size of 200 participants was needed.

[3] To adjust for the individual risk attitude. We include the standard hypothetical lottery question to elicit the risk preference in the main study in line with the recommendations of Dohmen et al. (2011).

[4] The participants subscribe to be invited to participate in scientific experiments. Their time is rewarded. For each experiment, the invitations are sent, informing the participants of the duration of the experiment and the reward system. Participation in the experiments is voluntary and the platform Answeo does not provide personal identification of the participants.

The second pre-study, implemented in June 2023, was reset to the water supply context. Based on the results of the second pre-study we were able to estimate the share of the participants who respond to within-subject variation in treatment. Approximately one in four (25%) participants changes the decision between neutral, sympathetic and antipathetic conditions. In the final sample the share of participants providing relevant identification is similar, and slightly higher - around 32% of the whole experimental sample.

Finally, the pre-studies were deployed to ascertain if the participants understand the objective of the experiment: the last question of the survey included an open question about the beliefs of the participants. Reading the answers to the open question reveals that while a few participants did recognize the topic of empathy per se, no participant was aware of the research questions underlying our study.

Eventually, we collect answers from $N = 800$ participants. Following the findings from the first and second pre-study, we estimated that this number should provide us a sample of at least 200 answers valid for testing the hypotheses (minimum sample size = 800 * 0,25 (share of subjects providing relevant identification in the pre-study)). The individuals who participated in the pre-studies were excluded from the subject pool invited to participate in the main study.

Analysis plan We explore whether empathy (sympathy and antipathy) towards others change the probability of choosing a risky plan *ceteris paribus* under the gain versus the loss framing. We isolate the effect of affect from the effect of social distance. Our main outcome variable of interest is the gap between the gain and the loss framing of choosing a risky plan. We formulate the following hypothesis, in which GvL gap is defined as a difference in probability of choosing risky plan in loss framing and in gain framing.

Hypothesis 1 *The GvL gap is larger in neutral condition than when affective empathy is induced (ceteris paribus).*

This hypothesis is derived directly from Vasquez and Weretka (2020): the exposure to specific affect - sympathy or antipathy - alters the size effects for the GvL framing. From the perspective of paternalistic empathy, gain and loss framing should not matter for the decision. The outcome from both plans is the same in terms of the expected value. Risk can affect the utility of the others without affecting the outcomes. Thus, inducing affect changes the probability of choosing risky plan as a function of the affect, due to being concerned with welfare of the others rather than the outcome itself. The existing literature rests on social distance to explain participants choices.

Note that prospect theory is not clear on the predictions. Following the results of Raue et al. (2015), choosing the risky plan in loss framing can be seen as a chance to avoid higher loss. On the other hand, in the gain framing risky plan can be seen more as a threat of losing secure solution. The loss framing tends to encourage more risk-taking compared to the gain framing. This creates positive gap in probability to take risk between the treatments. Inducing sympathy or antipathy towards residents is likely to neutralize framing effect as following emotional relation, subject can analyze the outcomes rather then focuses on the description.

In our study, we purposefully manipulate the distance dimension to isolate the effect of affect from social distance. In the analysis we explore fully the fact that we can observe within subject variation in response to difference in affect towards residents. We test the Hypothesis 1 on a whole sample and a subsample of

participants providing relevant identification in our analysis, so those who responded differently to at least one of the three experimental questions.

Model Our model of interest allows to ascertain that after controlling for individual fixed effects, subjects systematically differs more in responding in neutral condition than in empathy conditions. Every participant makes three choices in the experiment: in no-affect context, in sympathetic context and in antipathetic context. We can thus estimate a model with individual fixed effects, thus ignoring idiosyncrasies of empathy across subjects.

We identify the individuals for whom the choice differs depending on the affect and analyze regularities that are derived from affective empathy as proposed by Vasquez and Weretka (2020). Accordingly, our baseline measure takes on the value of 1 if the participant preferred plan B or plan Y (the maintenance programs which involve uncertainty) and 0 otherwise. Thus, our model of interest reads as follows:

$$\pi(risky_i = 1) = \beta_i + \sigma \text{ sympathetic} \times \text{loss}_i + \alpha \text{ antipathetic}_i \times \text{loss}_i + \epsilon_{i_j}, \tag{0}$$

where β_i denotes individual fixed effects. We set neutral context to be the base level for affect. Vector σ signifies the own effect of sympathetic affect (relative to neutral), and the interaction with the loss framing. Analogously, α is a vector of own effects and interaction terms related to antipathetic affect. We introduce also a specification with a three-way interaction, which explores the between- and within-subject variation in one specification. In this specification we estimate an additional effect of sympathetic (antipathetic) context in loss condition for acquaintances (relative to neutral context in framing with strangers).

4 Data

Experimental data was gathered from 800 participants (400 women and 400 men) through an online experiment. Those participants correctly answered control questions that required understanding of the probability terms (see Appendix A1 Control questions). Each participant responded to three experimental questions: a control (without affection) and two questions designed to induce affection: sympathy and antipathy.

To isolate the effects of affect accurately, apart from the analyses on the total sample, we provide results for the subsample of participants who offered relevant identification choosing a different plan for one of the experimental questions. This subset comprised 254 participants, contributing a total of 762 data points. Of these, 119 were women, constituting 46.85% of the sample. Notably, participants in the final subsample were slightly younger on average than those in the entire sample (35.2 versus 36.3 years old), with a higher proportion being men. Details regarding the distribution of experimental participants are provided in Table 2.

Table 2: Distribution of answers in water supply experiment

Responses	Number of participants	Share of collected sample (%)	Average age	Share of women (%)
Participants providing relevant identification:	254	31.75	32.9	46.9
Participants not providing relevant identification:				
Always not risky	80	10.00	37.1	50.0
Always risky	132	16.50	36.1	53.8
Inconsistent	334	41.75	36.8	51.5
Total	800	100	35.5	50.0

The answers from the participants who consistently selected the same plan are treated with caution. We identified two possible reasons of such pattern. Some of the participants were strictly risk-averse or always risk-taking, so they would not respond to the affection (or any other) treatment in any circumstances. The other participants can be characterized by insufficient attentiveness or motivations not within this study's scope. Provided by those participants data were unsuitable for the analysis, as subject fixed effects could not be controlled. However, the sample of subjects providing inconsistent answers appeared random, with average age and the proportion of women mirroring the overall sample. Gender differences between always risk-taking and strictly risk-averse participants were identified in the previous literature Byrnes et al. (1999).

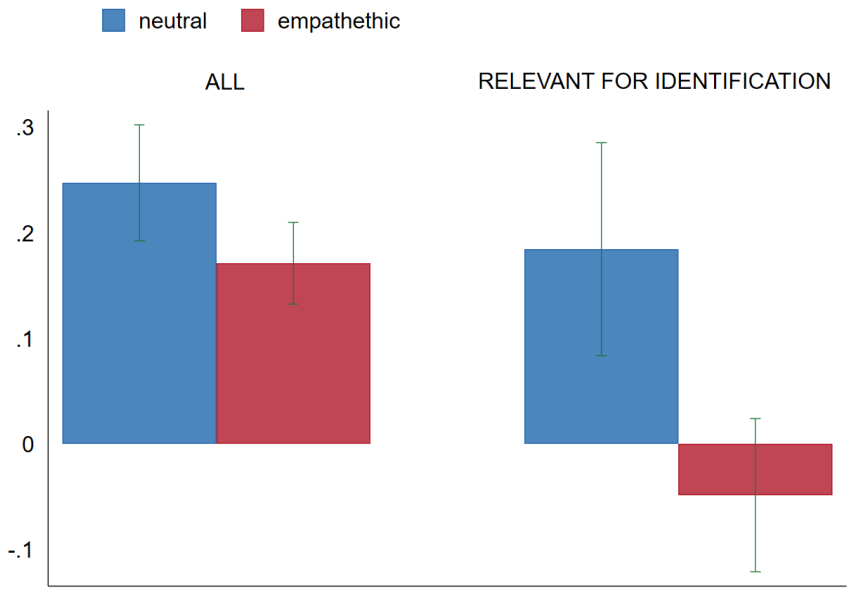
The data analysis in the subsequent section is based (a) on the total sample of 800 participants; (b) on 762 data points provided by 254 subjects, who provided relevant identification in the study.

5 Results

We present the experiment results with the following order: first, we examine the GvL gap among all subjects and those who provided relevant identification for our analysis without controlling for the subject's fixed effects, second, we explore the direction of changes in risk taking at the individual level with the regression analysis.

Figure B.1 illustrates aggregated differences in probability of selecting a risky plan between the gain and the loss treatments (GvL gap) in the total sample and only among those who provided relevant identification in the study (without distinction between strangers and acquaintances). In response to Hypothesis 1, the gaps in the frequency of choosing risky plans among empathetic and neutral treatments reveal patterns with the direction expected from Hypothesis 1.

Figure 1: Share of risky choices among subjects (total sample and those providing relevant identification)



Notes: The bars present a GvL gaps under neutral and empathetic (sympathetic and antipathetic together) treatments. First two bars are calculated for the total sample - 800 participants, the second two bars - only among those who choose different plans in two out of three questions. Each bar is accompanied by 90% confidence intervals using sum of variances of each distribution as a variance of the difference between shares.

The GvL gap in the neutral condition is always positive, while the GvL gap in the empathetic conditions is positive in the whole sample, and equal to zero among those who select different plans between treatments. This means that overall participants are more likely to choose risky plan in the loss framing than in the gain framing, which is a typical results in a *Asian disease* experiments. The gaps differs significantly for the sample of participants providing relevant identification in the experiment, however parametric standard errors provided for total sample implicate lack of the significant difference between the gaps. Taking into account that one of the assumptions of the parametric confidence intervals is violated - the individual data points are not independent (affect treatments are provided within-subject), we complement the graph with series of tests based on bootstrapped standard errors. The results are presented in Table 3.

Table 3: Test for the equality of GVL gaps (with bootstrapped standard errors)

$H_0: GvL\ gap_n = Gvl\ gap_x$ $H_1: GvL\ gap_n \neq Gvl\ gap_x$	100 replications		500 replications		1000 replications	
	difference	p-value	difference	p-value	difference	p-value
Only relevant identification:						
neutral vs. empathetic	0.233	0.014	0.233	0.004	0.233	0.005
neutral vs. sympathetic	0.201	0.026	0.201	0.030	0.201	0.031
neutral vs. antipathetic	0.265	0.006	0.265	0.010	0.265	0.012
All:						
neutral vs. empathetic	0.076	0.001	0.076	0.005	0.076	0.004
neutral vs. sympathetic	0.066	0.029	0.066	0.025	0.066	0.027
neutral vs. antipathetic	0.087	0.003	0.087	0.007	0.087	0.007

Elaborating on the results reported in Table 3, when bootstrapped standard errors are provided, all

possible tests comparing GvL gaps under neutral and affection treatments are significant at the 5% significance level. The difference between gaps is always positive, which is consistent with Hypothesis 1. On average the difference between GVL gaps is 0.2-0.25 for the participants providing relevant identification in the experimental study, and 0.06-0.09 for the whole sample.

What is worth noted, as it is presented in Table 3 and Appendix Figure B1, the difference between GvL gaps under neutral and empathetic treatments is not driven by the difference between sympathetic and antipathetic treatments (that could cancel out particular patterns between sympathetic and antipathetic conditions). In fact, regardless of the type of empathetic affect (sympathetic or antipathetic) the GvL gap is statistically the same.

Table 4: Regression results - emotional contagion treatment - subject level effects.

OLS with subject's FE	Relevant identification		All	
	(1)	(2)	(3)	(4)
sympathetic (σ)	0.197***	0.101	0.064**	0.030
	(0.074)	(0.119)	(0.025)	(0.035)
antipathetic (α)	0.273***	0.339***	0.089***	0.102***
	(0.086)	(0.121)	(0.029)	(0.038)
sympathetic # loss (σ)	-0.197*	-0.101	-0.064*	-0.030
	(0.113)	(0.176)	(0.036)	(0.055)
antipathetic # loss (α)	-0.265**	-0.392**	-0.087**	-0.119**
	(0.128)	(0.181)	(0.041)	(0.058)
sympathetic # acquaintances (σ)		0.173		0.066
		(0.151)		(0.049)
antipathetic # acquaintances (α)		-0.120		-0.024
		(0.171)		(0.058)
sympathetic # loss # acquaintances (σ)		-0.173		-0.066
		(0.231)		(0.073)
antipathetic # loss #acquaintances (α)		0.234		0.059
		(0.256)		(0.082)
constant	0.438***	0.438***	0.605***	0.605***
	(0.034)	(0.034)	(0.011)	(0.011)
N	762	762	2400	2400
R^2	0.1396	0.1484	0.7009	0.7019

The xtlogit regressions obtained for 285 observations from 95 subjects. Notes: Estimates from a panel regression with fixed effects. * p-value 10%, ** p-value 5%, *** p-value 1%

Exploring further the experimental data, we analyze regression results. The estimates, as outlined in Table 4, reveal that when accounting for subject's fixed effects, the expected patterns emerge. The regression results shed light on the treatment effects at an individual level, effectively controlling for any inherent differences among subjects. Table 4 illustrates that the differences between treatments attain significance, particularly between the neutral condition and the antipathetic conditions. Specifically, the gap is negative in the gain framing and positive in the loss framing, signaling a statistically significant and positive disparity between treatments. Including fixed effects complement and strengthen the conclusions from the graphical analysis and tests based on bootstrapped standard errors - the empirical findings stay in line with Hypotheses 1, prospect theory and affective empathy theory.

To sum up, taking into account all of the analyses in this section, experimental results remain consistent with the Hypothesis 1.

6 Discussion

Framing Effect and Risky Choices Our results align with the predictions of Prospect Theory, indicating that the framing effect makes people more risk-averse in gain framing and more risk-taking in loss framing. However, analyzing only subjects who provided relevant identification in the experiment, we reach such result only in the neutral condition. When the empathetic affection is introduced the gap disappears.

Social distance and Risky Choices So far, in the literature, the difference in GvL gap was explained by the difference in social distance between decision-maker and others for whom the decision was made. In our study we provide such differentiation, but only between subjects. When we test this differences on the whole sample we do not find a statistical significance neither in the gain, nor in the loss treatment. Additionally, when we consider only those subjects who provided relevant identification in our analysis the interactions between the social distance and affection remain insignificant.

However, the context of social distance turns out to be important for the affection treatment effect - the difference in affection were more likely to be significant when the perception of the close relationship was not provided. When the affection treatments were accompanied with the acquaintances relationship with residents, the effect of a sympathetic relation was fading away.

Limitations It is important to acknowledge that our study design does not allow us to discern if individuals would behave differently in non-paternalistic decision-making settings compared to the paternalistic contexts we examined. Therefore, while our findings provide valuable insights into paternalistic decision-making under uncertainty, they may not be applicable to other decision-making situations. Future research could aim to further test the validity of our results in other contexts of paternalistic decision-making, and investigate potential divergences in non-paternalistic settings. This would enhance our understanding of the nuanced role of empathy and relational closeness in decision-making processes across different contexts.

7 Conclusions

Although the decision under uncertainty on behalf of others is empirically explored, there is no consensus on the the source of the mechanism. Existing literature attributes differences in the probability of making a risky decision to social and psychological distance. Although the prospect theory provides insights into the mechanisms behind making riskier decisions under gain and loss framing, this theory does not explain why social distance can play a role.

In this study, we explore different theoretical angle: affective empathy hypotheses and provide an empirical test on how inducing affection - sympathy and antipathy - changes the probability of choosing a risky option in a *Asian Disease* experiment. We find that introducing direct sympathy or antipathy change significantly the probability of choosing a risky plan, in comparison to the neutral condition.

This aspect of inducing empathy is particularly important from the perspective of theory on the role of empathy in decision-making. The *Asian Disease* GvL gap is an example of violation of assumptions that the decision-maker has a well defined preferences towards taking risk, and make a decision based on the expected outcomes. This study shows that highlighting empathetic relation can mitigate the effect of framing.

In our experiment, we find the largest and positive GvL gap for neutral context, and lack of the framing effect for empathetic conditions in the subsample of participants providing relevant identification in our study. The result is confirmed by the statistical tests (without including individual's effects of subjects) and in regression analyses that take into account differences on the individual level. The effect of antipathetic treatment seems to be somehow stronger than sympathetic, but this can be recognized only in regression and when the interactions with social distance are included.

Our experiment design does not include any real consequences, and as such is not as strong in design as it could be. However, such construction would bias the difference towards zero. The fact that we find a significant effect of introducing affection strengthens the value of the empirical findings. Further exploration of the mechanism of empathetic altruism is needed to confirm the leading role of empathy in decisions on behalf of others.

Conflict of interest statement

All authors declare that they have no conflicts of interest.

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A Supplement Material

GRAPEx - modernization of the water pipeline

Sir/Madam, We are researchers from .... Currently, we are conducting research on decision-making that affects the situation of other people. We would be grateful if you could share your opinion with us. The survey should not take more than a few minutes. You can opt out at any time, but only those who complete the survey will receive compensation. We guarantee anonymity. Please direct any questions regarding the survey to the e-mail address: ...

Introduction

Below are 10 pairs of lotteries in which participation is free. Which option – A or B, would you be more inclined to choose each time, considering the changing probabilities of winning at a given amount?

	Lottery A	Lottery B
Lottery A: 20 zł with probability 10% or 16 zł with probability 90% Lottery B: 38.5 zł with probability 10% or 1 zł with probability 90%		
Lottery A: 20 zł with probability 20% or 16 zł with probability 80% Lottery B: 38.5 zł with probability 20% or 1 zł with probability 80%		
Lottery A: 20 zł with probability 30% or 16 zł with probability 70% Lottery B: 38.5 zł with probability 30% or 1 zł with probability 70%		
Lottery A: 20 zł with probability 40% or 16 zł with probability 60% Lottery B: 38.5 zł with probability 40% or 1 zł with probability 60%		
Lottery A: 20 zł with probability 50% or 16 zł with probability 50% Lottery B: 38.5 zł with probability 50% or 1 zł with probability 50%		
Lottery A: 20 zł with probability 60% or 16 zł with probability 40% Lottery B: 38.5 zł with probability 60% or 1 zł with probability 40%		
Lottery A: 20 zł with probability 70% or 16 zł with probability 30% Lottery B: 38.5 zł with probability 70% or 1 zł with probability 30%		
Lottery A: 20 zł with probability 80% or 16 zł with probability 20% Lottery B: 38.5 zł with probability 80% or 1 zł with probability 20%		
Lottery A: 20 zł with probability 90% or 16 zł with probability 10% Lottery B: 38.5 zł with probability 90% or 1 zł with probability 10%		

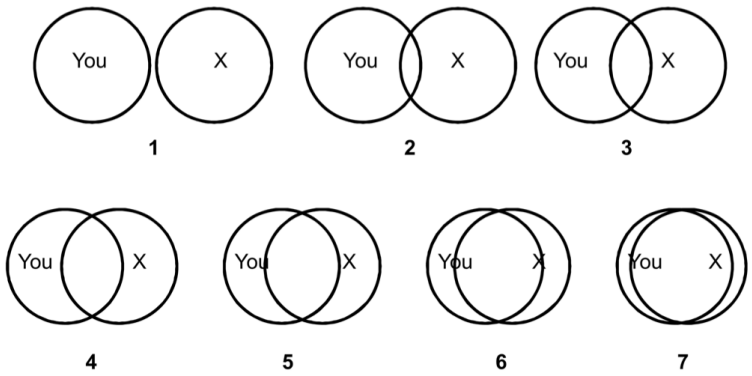
Imagine that the waterworks in your city is being modernized. The changes force a temporary reduction in water supplies (8-hour breaks a day) throughout the modernization period. In total, the changes may affect 1,000 households. There are two possible solutions:

[GAIN TREATMENT]

- Program A - 250 households (out of 1 000) will have water supply during the whole day for the maintenance period;
- Program B - with a probability of 1/4 all 1000 households will have water supply during the whole day for the maintenance period, and with a probability of 3/4 no household will have water supply for 8 hours a day during the maintenance period.

[LOSS TREATMENT]

- Program X - 750 households (out of 1000) will lose water for 8 hours a day during the maintenance period;
- Program Z - with a probability of 1/4 none of 1000 households will lose water during the maintenance period, and with a probability of 3/4 all households will lose water for 8 hours a day during the maintenance period.



[ALL] The modernization starts today and will last a month.

Control questions

[GAIN TREATMENT]

- What is the probability (in %) that 250 households will have water supply during the whole day for the maintenance period in **Plan A**?
- What is the probability (in %) that 250 households will have water supply during the whole day for the maintenance period in **Plan B**?

[LOSS TREATMENT]

- What is the probability (in %) that 750 households will lose water for 8 hours a day during the maintenance period in **Plan X**?
- What is the probability (in %) that 750 households will for 8 hours a day during the maintenance period in **Plan Z**?

Water supply problem

Please, imagine that you are the manager of a building that may be affected by water supply interruptions.

[KNOWN BY FIRST NAME TREATMENT] You know well all of the residents. You are on a first-name basis with them.

[STRANGERS TREATMENT] You don't know the residents well, they are practically strangers to you.

[ALL] Which of the following programs would you choose for the residents of the building you manage?

[SYMPATHETIC CONDITION] Assume that you have great sympathy for the residents of that building, and you meet them from time to time to talk about important community issues.

[ALL] Which of the following programs would you choose for the residents in such situation?

How close

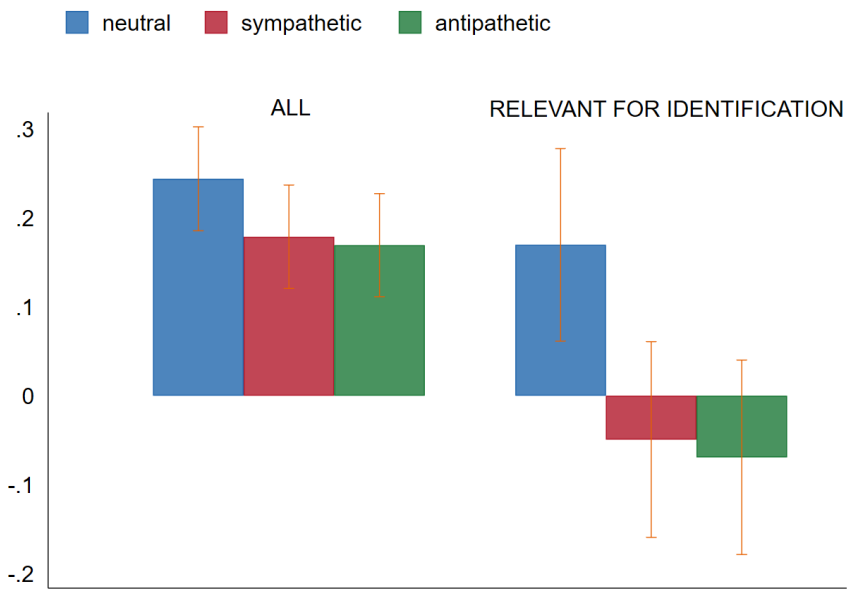
[ANTIPATHETIC CONDITION]] Assume that your interactions with residents are limited to resolving conflicts, dealing with their constant problems and listening to complaints.

[ALL] Which of the following programs would you choose for the residents in such situation?

How old are you? Please enter only a number between 20 and 60. How large is the city you are living in? [4 categories]

B Results - sympathetic versus antipathetic

Figure B.1: Share of risky choices among subjects - sympathetic and antipathetic separately



Notes: The bars present a GvL gaps under neutral, sympathetic and antipathetic treatments. First three bars are calculated for the total sample - 800 participants, the second three bars - only among those who choose different plans in two out of three questions. Each bar is accompanied by 90% confidence intervals using sum of variances of each distribution as a variance of the difference between shares.