Is risk attitude toward health outcomes context driven?

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Abstract

Economists consider personality as a non - cognitive asset that can have important consequences on individuals' economic behavior and a number of studies investigates several personality traits within a diversity of domains. Van der Pol and Ruggeri showed through various studies with different techniques, populations and contexts, that risk attitude (RA) depends on whether individuals face choices regarding possible health gains in terms of life expectancy or quality of life. Here, we aim to explore this pattern by investigating whether individuals' RA may change depending on the perception of the social arrangements, cultural and economic context in which they are asked to imagine going to live. Our study shows that, concerning the health domain, significant differences can be found in the RA of individuals imagining to experience a change in their set of social arrangements and standards of living. More specifically, individuals tend to be more risk averse when they are asked to move toward a country with a different religion, a lower average income, a different distribution of wealth and standard of living.

Key words: Risk attitude, Health domain, Standard Gambles

JEL Classification: I12, C91, D81

Introduction

Economists consider personality as a non - cognitive asset that can have important consequences on individuals' economic behavior (Barsky, 1997) and a number of studies investigates several personality traits within a diversity of domains (McCrimmon, 1990; Lowenstein, 1993; Weber, 2002; Abdullahi, 2003). Whilst massive evidence exists on the extent to which personality traits are not stable over time (see for example Andersen 2008) some literature suggests that culture, socio-economic status and particular situations or contexts (i.e. emergency, disasters…) may play an important role on explaining individuals' behavior (see for example Croson and Buchan, 1999). Risk attitude (RA) is one of the personality traits which is more likely to be situation dependent (Tversky and Simonson, 1993, Kőszegi and Rabin, 2006; Cobb- Clark and Shurer, 2012 and Weber and Hsee, 2000). However, scarce empirical evidence, other than epidemiological studies investigating the multilevel or contextual analyses of social factors and health (see for example Pickett and Pearl, 2000), exists on the role that socio-economic context may play on determining changes in risky choices towards health outcomes. For example, Breyer and Fuchs (1982) traced back differences in risk attitudes for health outcomes to demographic or socioeconomic characteristics of the respondents and found that education is the most important correlate: choices of people with more years of schooling exhibited less risk-aversion for gains and less risk-seeking for losses. Van der Pol and Ruggeri (2008, 2012) showed through various studies with different techniques, populations and contexts, that risk attitude depends on whether individuals face choices regarding possible health gains in terms of life expectancy or quality of life. The two studies were performed in different countries (U.K. and Italy) and showed a sensitive variation on the results. Coretti and Ruggeri (2015) investigated whether these differences could be due to different elicitation techniques (Certainty equivalent instead of Probability equivalent) without finding significant differences in the RA measures. Whilst several potential biases (i.e. magnitude of gambles, order and sequence of gambles, ceiling effects…) one of the more challenging tracks if investigation is the diversity of populations investigated, with different perceptions of the extent to which different cultures and lifestyles may affect risk (Weber and Hsee, 2000). Moreover, several combined effects could impact differently in the individuals RA. For example, individuals living in different socio-economic context could react differently to present health choices, depending on the outcomes of choices that were given in choices given in the past (see for example Kőszegi and Rabin, 2006). Here, we aim to explore this pattern by investigating whether individuals' RA may change depending on the perception of the social arrangements, cultural and economic context in which they are asked to imagine going to live.

Methods

Study design

We created alternative scenarios to reproduce different contexts, cultures and standards of living. We looked at the Italian statistics on mobility (ISTAT, 2009) to identify well-known socioeconomic and cultural backgrounds to help respondents imagining to change the context of their choices: the U.S, the U.K and Tunisia. In order to account for different levels of perceived risk for health outcomes resulting in different magnitudes of payoffs (Gafni and Torrance, 1984), we covered severe and moderate health states regarding: (a) the chance of losing life years and (b) the chance of worsening in quality of life. Four health states were identified: (1) severe –life years (with chance of immediate death); (2) moderate – life years (with the chance of living just 5 years instead of 15); (3) severe – quality of life (without chance of losing years of life) involving the risk of severe worsening in mobility and daily activities and corresponding to the EQ-5D (see for example Dolan 2000) combination 23232 and (4) moderate – quality of life (without chance of losing years of life) involving the risk of moderate worsening in pain, mobility, discomfort, usual activities and anxiety and corresponding to the EQ-5D combination 22222. Moreover, the choice had to address the need to experience the interviewees with sudden chance of having fatal or permanent damages.

Experiment Protocol

Inclusion criteria and enrollment

Across 8 terms alumni, students and scholars of the numerous educational programs (BA, Msc and PhD in health economics and management) of Università Cattolica del Sacro Cuore, were invited by email to participate. The e-mail explained what participation involved without revealing the real aim of the study. Students were told that this was an exercise to estimate people's preferences for choices involving health, monetary gains and losses, sports, political parties, drug, food consumption, transport, education, hobbies, work placement, and alcohol and smoke addiction. No incentives were offered for participation. Students were asked to reply to the e- mail if they were willing to participate in the experiment. Participants were familiar with QALYs and EQ-5D classification (Dolan, 2000) and other issues/topics related to health economics and evaluation of healthcare. During a warm-up, we collected baseline characteristics (i.e. age, gender, education, life styles). Then, participants were randomized in 4 groups: 3 experimental and 1 control. Each experimental group was assigned a country.

Warm up session

In a warm-up session, individuals enrolled were given 1 hour to practice with a pilot close-ended questionnaire built with SNAP software in which monetary gambles were presented. Respondents were administered real questions involving health gambles and also "fake" questions about sports, smoke and alcohol, political parties, and so forth. Moreover, respondents were asked to assign a quality-of-life weight (range 0%–100%) representative of their health status. Finally, respondents were asked to assign a quality-of-life weight (range0%–100%) to 22222 and 23232 EQ-5D profiles. A research assistant was present during the warm-up session to explain the use of SNAP software and answer any questions. Because the laboratory was provided with only 20 computers, respondents were divided into six groups and scheduled for the experiment the day after.

First round

Individuals assigned to experimental groups were administered with video clips and vignettes concerning the standard of living, socio-economic setting and social arrangements of the assigned countries. By looking at the World Bank and OECD statistics, information was given about: welfare, religion, access to social assistance, access to labor market, access to public instruction, life expectancy at birth, literacy rate, GDP per capita, average income and distribution, top 5 causes of death, number of physicians per 1000 population, unemployment rate, government form, the result of the last elections and whether it was in force the death penalty. Then individuals were asked to specify a job and a salary they were willing to accept to move to the country assigned. Finally, were asked to imagine to receive a double – amount salary from an enterprise or an institution operating in the assigned country and to move.

Second round

Respondents belonging to experimental and control groups, were asked to imagine experiencing (1) cancer; (2) heart disease; (3) hip fracture and (4) asthma. Secondly they were asked to specify a Quality of Life (QoL) value ranging from zero (minimum) and 100 (maximum) to be assigned to every single condition. Then they were administered with gambles that involved payoffs reproducing certain and uncertain health outcomes achievable after having been administered with alternative interventions. To describe different health states vignettes were used.. We used certainty equivalent (CE) technique to elicit risk attitude (van Osch, 2004; Hershey, 1985). Consistently with our previous experiments (Van der Pol and Ruggeri 2008, 2012 and Coretti and Ruggeri, 2015) we elicited CE for: (1) gamble between 50% chance of immediate death in case of cancer treatment failure and 50% chance of gaining 5 years in case of success [0,5]; (2) gamble between 50% chance

of gaining 5 years in case of heart disease intervention failure and 50% chance of gaining 15 years in case of success [0-15]; (3) gamble between 50% chance of gaining 10 years in a moderate-severe health state (corresponding to EQ-5D 23232) in case of claudication due to intervention failure and 50% of gaining 10 years in full health in case of success [23232] and (4) gamble between 50% chance of gaining 10 years in a moderate health state (corresponding to EQ-5D 22222) in case of asthma worsening due to treatment failure and 50% chance of gaining 10 years in full health in case of success [22222]. The values of the certain health outcomes achievable with a safer but less effective treatment were: 2.5 years in (1); 10 years (2); 5 years in full health followed by 5 years in 23232 in (3) and 5 years in full health followed by 5 years in 22222 in (4).

A starting point bias is likely to be present, but as long as the bias is systematic across all four gambles, it will not affect the comparison across different types of outcomes (Cohen and Jaffray , 1988).

We used interactive closed-ended questions. The magnitude of the CE offered to respondents depended on their answer to the previous close-ended question. We report examples of the questions and one of the algorithm used in Appendix.

Gambles were administered before and after 20 "fakes." Fake questions were different and in different order for each respondent. Respondents were given 40 minutes to fill out the online SNAP questionnaire, and results of choices were registered automatically on a database. The research assistant was not informed about the kind of questions administered in the experiment and was present only to solve any technical problem and to verify that the protocol of the experiment was followed. Respondents were not allowed to talk to each other and could use only a chat line with the research assistant for technical clarifications and generic help. After talking two times with other respondents or explicit questions for help that could invalidate the results of the experiment (i.e., "excuse me, can you tell me how I can express that I prefer to die in any case?"), the interview was deemed invalid but the respondent was not informed. After the session, respondents were invited to sit in a different hall to avoid contact with the following groups.

Versions of the questionnaire

Four version of the questionnaire were prepared in order to investigate for framing effects (Roelofsma 1995, van der Pol 2008). To investigate for order effect, version 1 and 3 the gambles involving chance of gaining life years were administered before the gambles involving quality of life, whilst in version 2 and 4 gambles involving quality of life were administered first. In order to investigate for sequence effect in versions 1 and 2 gambles involving severe health states (0-5 and 23232) were administered before the ones involving moderate health states (5-15 and 22222). In

versions 3 and 4 gambles involving moderate health states were administered first. The four versions of the questionnaire were administered randomly.

RA estimation

CE less than, equal to, or greater than the expected outcome of the gamble indicated risk aversion, neutrality or seeking. We defined a risk attitude (RA) measure as the ratio between individual CE and the expected outcome of each gamble. A RA smaller than one indicated risk aversion. A RA higher than one indicated risk seeking.

Empirical strategy

The analysis of results was conducted on a blind basis, with the analyst not knowing whether Control, or Experimental groups were analyzed first. Our empirical strategy was the following:

1. By using chi – squared and paired t-test, we performed a case-control analysis to compare the results of each experimental group with the control. Chi-squared was used to investigate for significant differences in the number of individuals risk seeking/averse within the different groups, whilst t-test was used to investigate for differences in the RA measures.
2. Ordinary Least Squared (OLS) were estimated with the RA of each gamble being the dependent variable to explore RA differences among different gambles.
3. Augmented random effects incorporating all four gambles were estimated with (a) RA measure and (b) a dummy explaining whether individuals were risk loving (RL) being dependent variables were used to explore: (a) whether being randomized to different groups produced overall (not gamble-specific) variations in the RA measure (b) whether belonging to different groups produced an overall switch from being risk loving to risk averse.
4. Breusch and Pagan Lagrangian multiplier was used to test for heteroscedasticity with justifies the use of the random effects with the OLS estimation (assuming homoscedasticity) being the null hypothesis.

Econometric specifications

<u>OLS</u>

For each wave an OLS estimation was conducted with RA being the dependent variable. The econometric specification was:

$$ra_w = \alpha + \beta_1 USA + \beta_2 UK + \beta_3 TUN + \beta_4 ORD + \beta_5 SEQ + \beta_6 FEMALE + \beta_7 AGE + \\ + \beta_8 SMOKER + \beta_9 ALCHOOL + \beta_{10} EXTREME + \beta_{11} HEALTH + \beta_{12} MODERATE + \\ + \beta_{13} SEVERE + \varepsilon$$

Restricted forms of the model were also estimated progressively excluding : (a) MODERATE and SEVERE variables; (b) HEALTH, EXTREME, ALCHOOL and SMOKER; (c) FEMALE and AGE.

Augmented random effects

Two augmented random effects models were estimated in order to propagate differences in RA and RL among groups across all waves. The econometric specification of the RA model was:

$$ra = \mu + \gamma_1 USA + \gamma_2 UK + \gamma_3 TUN + \gamma_4 ORD + \gamma_5 SEQ + \gamma_6 FEMALE + \gamma_7 AGE + \\ + \gamma_8 SMOKER + \gamma_9 ALCHOOL + \gamma_{10} EXTREME + \gamma_{11} HEALTH + \gamma_{12} MODERATE + \\ + \gamma_{13} SEVERE + U_w + V$$

The econometric specification of the RL model was:

$$rl = \upsilon + \delta_1 USA + \delta_2 UK + \delta_3 TUN + \delta_4 ORD + \delta_5 SEQ + \delta_6 FEMALE + \delta_7 AGE + \\ + \delta_8 SMOKER + \delta_9 ALCHOOL + \delta_{10} EXTREME + \delta_{11} HEALTH + \delta_{12} MODERATE + \\ + \delta_{13} SEVERE + \mathrm{Z}_w + \Omega$$

The RL model was estimated with a logistic regression, being RL a dummy variable. Table 1. reports the name, type and values of the variables included in the models.

Table 1. description of variables included in the econometric specifications

Variable	Description	Type	Values
RA	Risk attitude measure	Continuous	0-2
RL	Individuals risk loving	Dummy	1 if RA≥1 / 0 if RA <1
Usa	Individuals enrolled in the USA group	Dummy	Yes =1 /No =0
Uk	Individuals enrolled in the UK group	Dummy	Yes =1 /No =0
Tun	Individuals enrolled in the Tunisia group	Dummy	Yes =1 /No =0
Ord	Order of gambles administered	Dummy	Life years first =1/ Quality of life first =0
Seq	Sequence of gambles administered	Dummy	Moderate health state first =1 / severe health state first =0
Female	Gender	Dummy	Female = 1 / Male =0
Age	Age of individuals	Discrete	22 - 56
Smoker	Smoking habits	Dummy	Yes =1 /No =0
Alchool	Individuals drinking alchool more than 3 days a week	Dummy	Yes =1 /No =0
Extreme	Individuals experiencing extreme sports	Dummy	Yes =1 /No =0
Health	Individuals health status	Continuous	0-1
Intermediate	Value assigned to an intermediate health state (described with the EQ-5D)	Continuous	0-1
Severe	Value assigned to a severe health state (described with the EQ-5D)	Continuous	0-1
w	Waves		1, 2,3,4
α	Intercept of the OLS models		
μ	Intercept of the Random effects model (with RA as dependent variable)		
ν	Intercept of the Random effects model (with RL as dependent variable)		
βn	OLS Regressions coefficients		
γn	Random effects regression coefficients (with RA as dep. variable)		
δn	Random effects regression coefficients (with RL as dep. Variable)		
ε	Unobserved part of the OLS model		
U	Wave specific Random effects (with RA as dep. variable)		
V	Individual specific Random effects (with RA as dep. variable)		
Z	Wave specific Random effects (with RL as dep. variable)		
Ω	Individual specific Random effects (with RL as dep. variable)		

Results

Descriptive statistics

Across all waves, 409 people were invited to participate in the experiment. Of these, 269 accepted, whilst 217 attended the warm up and 208 people participated in the experiment (Table 2). No

significant differences were found in the baseline characteristics between control and experimental groups.

Table 2 Descriptive statistics of sample

		Control Group	U.K. Group	U.S. Group	Tunisia Group
N		52	52	52	52
Age (mean)[a]		30	28.5	29	29
Catholic	Yes	52	52	52	52
	No	0	0	0	0
Gender[b]	M	27	10	9	15
	F	25	42	43	37
Smoke[b]	No	47	44	40	37
	Yes	5	8	10	15
Alcohol[b] > 2 days/week	No	49	47	47	48
	Yes	3	5	5	4
Bachelor degree	Yes	30	31	33	32
	No	22	21	19	20
Full health[b]	No	11	8	6	6
	Yes	41	44	46	46
Extreme sports[b]	No	52	52	51	50
	Yes	0	0	1	2

[a] *t-value:* Group 1 vs control, 0.33; Group 2 vs control, 0.19; Group 3 vs control 0.28.
[b] χ^2 every group vs control ≥ 0.5

Descriptive results

Individuals belonging to the U.K. group, exhibited the lowest gross yearly salary they would be willing to accept to move (€ 55.400 ± €7.180), whilst individuals belonging to Tunisia group exhibited the highest (€ 63.217 ± €28.257). Individuals asked to move to the U.S. declared to be willing to accept € 59.152 (± €16.816).

Significant differences with the control ($p \leq 0.000$) were found in the risk categories of the Tunisia group concerning the gambles involving chances of improvement (worsening) in Quality of life where the majority of respondents was risk averse whilst in the other groups was risk seeking. In the U.S. group, significant differences ($p \leq 0.05$) were found in the 22222 (moderate Quality of Life) gamble (Appendix Table 1.).

Significant differences ($p \leq 0.05$) were also found in the RA measures (Appendix Table 2.) for individuals belonging to Tunisia group. Whilst in the 23232 gamble, the RA measure indicates risk seeking for the control, the U.K and the U.S. groups, in the Tunisia group indicates risk aversion

whilst in the 22222 gamble, the RA was significantly lower compared to the control ($p \leq 0.05$). An order effect was found in the U.S. group ($p \leq 0.10$) with the number of risk averse being higher when life years gambles were administered before those involving quality of life .

Regressions results

OLS estimations

Tables 3.-6. Show the results of the OLS estimations for each gamble. RA measures regarding the (0-5) gamble does not present significant results (Table 3.) for full and restricted forms whilst the models regarding the (5-15) gamble (Table 4.) show a significant relation between female gender and lower RA measures. Therefore in gambles involving the chance of gaining life years, no significant effects are likely to be present with specific regard to the country group in which individuals were randomized. Nevertheless, these effects are showed in the model which considers the RA measure of the gamble (Table 5.) involving chances of having moderate gains in Quality of Life (22222). In this case, individuals randomized in the Tunisia group are more likely to be associated with lower RA measures. Moreover, a significant sequence effect ($p<0,10$) is also present thus suggesting that individuals dealing first with gambles involving severe conditions (0-5 and 23232 before 5-15 and 22222) present lower RA measures. In the last estimates (Table 6.), regarding the RA for the gamble involving the chance of having severe changes in Quality of life the relation between lower RA measures and being randomized in the Tunisia group are weaker ($p< 0,10$) and absent in the more restricted forms of the model (a and c). The other coefficients are not significant. R-squared present values ranging 0,04 and 0,11, with the estimates regarding gambles (5-15) and (23232) presenting the higher values.

Table 3. OLS estimations. Gamble between 50% chance of immediate death and living another 5 years

Variable	Model1	Model2	Model3	Model4
Usa	.0025	.02488312	.02597196	.02711484
Uk	-.01096154	.01917243	.02027413	.01732996
Tunisia	-.09461539	-.07480654	-.07185163	-.0555397
Order	.15038461*	.1330729*	.12584144	.12389522
Sequence	.03134615	.03332243	.03630404	.04009915
Female		-.05302393	-.06310175	-.06660751
Age		.0072921	.00784563	.00797911
Smoker			.00435812	-.00039782
Alcohol			-.05260924	-.0554897
Extreme sp.			-.12392002	-.13557126
Health			-.07559151	-.07493856
Mod. Health				-.00256349
Sev. Health				.0038543
Const	.90548079***	.74750375***	.75857136***	.7739891***
N	208	208	208	208
r2	.02412246	.04138095	.04527883	.04888116
r2_a	-.00003292	.00782928	-.00830246	-.01485361

legend: * p<.1; ** p<.05; *** p<.01

Table 4. OLS estimations. Gamble between 50% chance of living another 5 years and living another 15 years

Variable	Model1	Model2	Model3	Model4
Usa	.05038461	.08329266	.07966605	.08213749
Uk	.12653846	.14853701	.14151542	.13674995
Tunisia	-.04634615	-.03112054	-.04121786	-.02799871
Order	-.11298077	-.09439478	-.10235934	-.10464806
Sequence	.04605769	.03526573	.03564946	.03840637
Female		-.13148855	-.1333268	-.13627638
Age		-.01455797***	-.01379936***	-.01364167***
Smoker			.02235105	.02003043
Alcohol			-.05139673	-.05435316
Extreme sp.			-.01850071	-.02419146
Health			-.09429468	-.09365004
Mod. Health				-.00171512
Sev. health				.00285186
_cons	.90692309***	1.3478286***	1.3533813***	1.3564717***
N	208	208	208	208
r2	.02968485	.09733555	.10222355	.10448584
r2_a	.00566715	.0657423	.05183814	.04447716

legend: * p<.1; ** p<.05; *** p<.01

Table 5. OLS estimations. Gamble between 50% chance of living another 10 years in moderate health status and living another 10 years in full health

Variable	Model1	Model2	Model3	Model4
Usa	-.00884615	.02805861	.01878973	.01436235
Uk	.02615385	.06185997	.05046778	.05679026
Tunisia	-.31173077***	-.28777981***	-.30835448**	-.30153244**
Order	-.05721154	-.05815696	-.04794867	-.04650395
Sequence	.14471154*	.13938601*	.1357317*	.13833044*
Female		-.12097199	-.10730581	-.10842752
Age		-.00381878	-.00445528	-.00455665
Smoker			.14683139	.13997396
Alcohol			.00861668	.00938691
Extreme sp.			-.07347955	-.09026112
Health			.07699491	.07690135
Mod. Health				-.00222232
Sev. Health				.00247435
_cons	1.1958654***	1.3572566***	1.3331901***	1.3694915***
N	208	208	208	208
r2	.08353931	.09449162	.1088323	.1111058
r2_a	.06085464	.06279883	.05881778	.05154072

legend: * p<.1; ** p<.05; *** p<.01

Table 5. OLS estimations. Gamble between 50% chance of living another 10 years in severe health status and living another 10 years in full health

Variable	Model1	Model2	Model3	Model4
Usa	-.00057693	.02608761	.01309004	-.00787299
Uk	-.13673076	-.11288833	-.13365355	-.09966689
Tunisia	-.17769231	-.16160597	-.19975551*	-.22324813*
Order	-.08423077	-.08105188	-.07723589	-.06553837
Sequence	.01269231	.00764327	.00184592	.00036354
Female		-.09209959	-.07236142	-.06595583
Age		-.00497603	-.00473799	-.00554924
Smoker			.15300306	.1406812
Alcohol			-.04545712	-.0335316
Extreme sp.			.10240019	.07228443
Health			.00640036	.00401617
Mod. Health				-.00083748
Sev. Health				-.00215496
_cons	1.2955769***	1.47122***	1.4430387***	1.5383944***
N	208	208	208	208
r2	.02424185	.03305732	.04323349	.04974785
r2_a	.00008942	-.00078567	-.01046259	-.01392884

legend: * p<.1; ** p<.05; *** p<.01

Augmented random effects

Table 7. presents the results of the augmented random effects regression. All the forms estimated present a significant inverse relation (p<0,01) between RA measure and being randomized in

Tunisia group. Again, significant inverse relations are found regarding being female (p<0,05) and age (p<0,10), thus suggesting that the relations explored in the OLS estimations propagate in an overall model considering all the gamble and therefore the association between being randomized in Tunisia group and lower RA measures can be generalized. Table 8. Presents the results of the logit regression where RL was considered as dependent variable and shows that the overall effect of being randomized in the Tunisia group also impacts on the probability for individuals to switch from risk loving to risk averse. Moreover, a significant inverse relation (p<0,05 in forms a, b and d; p<0,1 in form c) between being female and probability of switching to risk averse is present.

Table 6. Augmented Random effects. Dependent variable RA

Variable	Model1	Model2	Model3	Model4
Usa	.01086538	.0405805	.03437945	.02893543
Uk	.00125	.02917027	.01965094	.02780082
Tunisia	-.15759615***	-.13882821**	-.15529487***	-.15207975***
Order	-.02600962	-.02513268	-.02542561	-.02319879
Sequence	.05870192	.05390436	.05238278	.05429988
Female		-.09939601**	-.09402394**	-.09431681**
Age		-.00401517*	-.00378675*	-.00394211*
Smoker			.08163591	.07507195
Alcohol			-.0352116	-.03349689
Extreme sp.			-.02837502	-.04443485
Health			-.02162273	-.02191777
Mod.Health				-.00183461
Sev.Health				.00175639
_cons	1.0759615***	1.2309522***	1.2220454***	1.2595867***
N	832	832	832	832

legend: * p<.1; ** p<.05; *** p<.01

Table 7. Augmented Random effects. Logistic regression. Dependent variable RL

Variable	Model1	Model2	Model3	Model4
Usa	-.17701287	-.04521046	-.05112245	-.0687045
Uk	.00003728	.13098688	.12886984	.15643042
Tunisia	-.50884316**	-.42308055**	-.41499823*	-.42828099**
Order	-.14787065	-.15997704	-.16564543	-.15684172
Sequence	.187244	.17088696	.175576	.17626067
Female		-.42908663**	-.44356887**	-.43960787**
Age		-.00958134	-.0098487	-.01048624
Smoker			.06161702	.0490575
Alcohol			.03493824	.04454009
Extreme sp.			-.46300306	-.49356849
Health			-.08982562	-.09183374
Mod. Health				-.00181151
Sev. Health				-.00018691
_cons	.2742399	.74843573**	.7748044***	.86292571**
lnsig2u				
_cons	-3.3628751	-4.0182928	-4.0221555	-4.0225452
N	832	832	832	832

legend: * p<.1; ** p<.05; *** p<.01

Breush and Pagan test

Table 8. shows the results of the Breush and Pagan Lagrangian multiplier test for random effect. The null hypothesis (use the OLS estimation without incorporating random effects) was rejected (p >chibar =0.0000)

Table 8. Breusch and Pagan Lagrangian multiplier test for random effects

```
                    |       Var     sd = sqrt(Var)
             ---------+-----------------------------
                   rp |   .3180203       .5639329
                    e |   .2993694       .5471466
                    u |   .0177297       .1331529

Test:   Var(u) = 0
                              chibar2(01) =   152.83
                           Prob > chibar2 =   0.0000
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Conclusions

Our study shows that, concerning the health domain, significant differences can be found in the RA of individuals imagining to experience a change in their set of social arrangements and standards of living. More specifically, individuals tend to be more risk averse when they are asked to move toward a country with a different religion, a lower average income a different distribution of wealth and standard of living. In particular, we noted that our results hold for gambles involving Quality of Life choices. No differences were found between experimental and control groups for the gamble involving the chance of immediate death, suggesting that individuals do not perceive social arrangements and other context variables as relevant when the payoff involve gains in terms of chance of having the life saved. Our results are controlled for age and QoL weights assigned to the four gambles. Concerning age, a significant inverse relation between age and RA was found, being

associated with the higher relative value assigned to quality of life gains by respondents with a lower life expectancy.

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Appendix Table 1: Risk categories by outcome and by group (%)

Gambles	Control Group (n=52)			UK Group (n=52)			US Group (n=52)			Tunisia Group (n=52)		
	Risk averse	Risk neutral	Risk seeking	Risk averse	Risk neutral	Risk seeking	Risk averse	Risk neutral	Risk seeking	Risk averse	Risk neutral	Risk seeking
0-5	52	2	46	54	0	46	50	0	50	54	2	44
5-15	58	2	40	62	0	38	48	2	50	67	2	31
23232	29	2	69	33	0	67	25	0	75	**54**	**0**	**46**
22222	33	0	67	40	0	60	*48*	*0*	*52*	**46**	**0**	**54**

Bold*:* chi-squared: vs Control group, $p \leq 0.000$

Italic: chi-squared: vs Control group, $p \leq 0.05$

<u>Underlined</u>: chi-squared: vs Control group, $p \leq 0.10$

Appendix Table 2. RA measures – mean (median)

Gambles	UK Group	US Group	Tunisia Group	Control group
0-5	0.99 (0.92)	0.98 (1)	0,90 (0.85)	0.99 (0.92)
5-15	0.92 (0.92)	1 (1.04)	0.82 (0.83)	0.87 (0.77)
23232	1.23 (1.34)	1.26 (1.34)	*0.92 (0.90)*	1.24 (1.23)
22222	1.25 (1.26)	1.12 (1.08)	1.08 (1)	1.25 (1.23)

Bold*:* t-test: vs Control group, $p \leq 0.000$

Italic: t-test: vs Control group, $p \leq 0.05$

Underlined*:* t-test: vs Control group, $p \leq 0.10$