

Depression, Risk Preferences and Risk-taking Behavior

Online Appendix

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Appendix A – Supplementary Tables and Figures

Table A1

SOEP SF-12 Questionnaire.

Question	Answers
How would you describe your current health?	Very good/ Good/ Satisfactory/ Poor/ Bad
When you have to climb several flights of stairs on foot, does your health limit you greatly, somewhat, or not at all?	Greatly/ Somewhat/ Not at all
And what about other demanding everyday activities, such as when you have to lift something heavy or do something requiring physical mobility: Does your health limit you greatly, somewhat, or not at all?	Greatly/ Somewhat/ Not at all
During the last four weeks, how often did you...	Always/ Often/ Sometimes/ Almost never/ Never
...feel down and gloomy?	
...feel calm and relaxed?	
...feel energetic?	
...have severe physical pain?	
...feel that due to physical health problems you achieved less than you wanted to at work or in everyday activities?	
...feel that due to physical health problems you were limited in some way at work or in everyday activities?	
... feel that due to mental health or emotional problems you achieved less than you wanted to at work or in everyday activities?	
...feel that due to mental health or emotional problems you carried out your work or everyday tasks less thoroughly than usual?	
...feel that due to physical or mental health problems you were limited socially, that is, in contact with friends, acquaintances, or relatives?	

Notes: SOEP Questionnaire. MCS score is calculated using factor analysis based on all items, including physical and mental health (see Anderson et al. (2007) for details). Bold items denote mental health dimension with higher factor loadings. For the SOEP-IS sample, we derive the MCS score slightly differently as the third SF-12 question

(limitations when lifting something heavy or doing something requiring physical mobility) is not asked. Thus, for the SOEP-IS sample there is only one variable for physical functioning whereas for the general sample the average of two variables is used.

Table A2

Variable Descriptions.

Variable	Description or survey question	Available
Risk measures		
Willingness to take risks in general	Answer to “How willing are you to take risks, in general?” on scale from 0 (not willing) to 10 (very willing).	2004, 2006, 2008-2016
Willingness to take risks in ...Driving	Answer to “How willing are you to take risks with respect to...?” on scale from 0 (not willing) to 10 (very willing).	2004, 2009, 2014
...Finance		
...Sports/Leisure		
...Occupation		
...Health		
...Trust		
Risky assets	Dummy for household owning risky assets (i.e., securities other than fixed interest securities, such as shares and variable bonds).	2002-2016
No supp. health ins.	Dummy for currently not covered by a supplementary private health insurance.	2002-2016
Smoker	Dummy for being a current smoker.	Even years 2002-2016
Poor diet	Categorical variable indicating agreement to statement that they follow a health-conscious diet on scale from 1 (strongly agree) to 4 (not at all).	Even years 2002-2014
Sedentary	Dummy for not exercising at least once a week.	2008
Lend belongings	Categorical variable indicating frequency at which the respondent lends belongings to friends on scale from 1 (never) to 5 (very often).	2008
Lend money	Categorical variable indicating frequency at which the respondent lends money to friends on scale from 1 (never) to 5 (very often).	2008
Depression Indicator		
Depression	Dummy for MCS<45.6 indicating suspected depressive disorder.	Even years 2002-2016
Controls		
Male	Dummy for being male.	Every year
Age	Age (in years).	Every year

Log income	Log of CPI adjusted monthly household net income (in EUR).	Every year
Edu. high	Dummy for an upper secondary school degree or higher.	Every year
Parent edu. high	Dummy for at least one parent with an upper secondary school degree or higher.	Every year
German born	Dummy for being born in Germany.	Every year
Household type	Categorical variable indicating individual lives in/as: single; couple w/o children; single parent; couple w children <16y; couple w children ≥16y; couple w children ±16y; multi-generation; other.	Every year

Mediators

Log permanent income	Log of average over all available observations of CPI adjusted monthly household net income (in std. dev.).	Every year
Patience	Answer to “Are you generally an impatient person, or someone who always shows great patience?” on scale from 0 (very impatient) to 10 (very patient) (in std. dev.).	2008, 2013
Non-impulsivity	Answer to “Do you generally think things over for a long time before acting — in other words, are you not impulsive at all? Or do you generally act without thinking things over a long time — in other words, are you very impulsive?” on scale from 0 (very impulsive) to 10 (not at all impulsive) (in std. dev.).	2008, 2013
Conscientiousness	Big Five measure of conscientiousness from 3 items (in std. dev.).	2005, 2009, 2012, 2013
Internal locus of control	Measure of internal locus of control from 7 items (in std. dev.).	2005, 2010, 2015, 2016
Emotional stability	Big Five measure of emotional stability from 3 items (in std. dev.).	2005, 2009, 2012, 2013
Confidence in future	Answer to “When I think about the future, I'm actually quite optimistic” on scale from 1 (disagree completely) to 4 (agree completely) (in std. dev.).	2008, 2013
Prediction accuracy	Reversed absolute difference between anticipated satisfaction with life in five years' time and realized satisfaction with life five years later (in std. dev.).	2002-2004, 2008, 2009, 2011
Trust	Answer to “On the whole one can trust people” on scale from 1 (strongly disagree) to 4 (strongly agree) (in std. dev.).	2003, 2008
Cognitive skills	Average of (usually 2 out of 3) standardized 90-300 seconds cognitive skill tests scores (animal listing task, symbol-digit correspondence task, or Multiple-Choice Vocabulary Intelligence Test) (in std. dev.).	2006, 2012, 2016

Notes: SOEPv33.1i 2002-2016.

Table A3

Data and Sample Descriptions.

Analysis	Data	Depressive	Max. obs.	Years of Subsample
Behavioral risk preferences	SOEP-IS 2014	21%	910 obs./ 910 persons ^a	2014
Stated risk preferences	SOEP			2004-2016 (even years)
Risk-taking behaviors	2002-2016 (even years)	27%	134,994 obs./ 40,032 persons	2002-2016 (even years)
Mediation analysis				2008-2016 (even years) ^b

Notes: SOEPv33.1i and SOEP-IS.2016.2. Max. obs. denotes maximal number of observations and unique persons available in this sample; number of observations (persons) may differ between estimations depending on availability of variables (see Appendix Table A2).

^a 34 observations are dropped from full risky choice experiment data because they completed the task more than once by error (personal correspondence with study researchers) and 6 because they do not have an MCS score.

^b We extrapolate values for potential mediators from most recent observation if missing in a particular year.

Table A4

Sample Characteristics, SOEP-IS.

	Mentally Well		Depressed		Difference	
	Mean	Obs.	Mean	Obs.	Value	P-value
Male	0.485	723	0.422	187	-0.063	0.124
Age	51.307	723	47.872	187	-3.435	0.022
Log income	7.772	697	7.666	180	-0.106	0.023
Edu. high	0.322	723	0.262	187	-0.060	0.113
Parent edu. high	0.189	723	0.182	187	-0.008	0.811
German born	0.884	723	0.861	187	-0.023	0.393
<i>Household type</i>						
Single	0.211	720	0.238	185	0.027	0.432
Couple w/o children	0.428	720	0.292	185	-0.136	0.001
Single parent	0.072	720	0.108	185	0.036	0.108
Couple w children <16y	0.117	720	0.189	185	0.073	0.009
Couple w children \geq 16y	0.097	720	0.097	185	0.000	0.998
Couple w children \pm 16y	0.038	720	0.049	185	0.011	0.489
Multi-generation	0.007	720	0.011	185	0.004	0.593
Other	0.031	720	0.016	185	-0.014	0.289

Notes: SOEP-IS.2016.2 2014. Variable definitions are the same as in SOEP, see Appendix Table A2 for detailed descriptions.

Table A5

Sample Characteristics, SOEP.

	Mentally Well		Depressed		Difference	
	Mean	Obs.	Mean	Obs.	Value	P-value
Male	0.500	97,706	0.402	37,288	-0.098	0.000
Age	49.302	97,706	48.152	37,288	-1.150	0.000
Log income	7.900	97,706	7.754	37,288	-0.146	0.000
Edu. high	0.298	97,706	0.267	37,288	-0.030	0.000
Parent edu. high	0.172	97,706	0.159	37,288	-0.013	0.000
German born	0.913	97,706	0.916	37,288	0.003	0.178
<i>Household type</i>						
Single	0.142	97,706	0.174	37,288	0.032	0.000
Couple w/o children	0.360	97,706	0.309	37,288	-0.051	0.000
Single parent	0.056	97,706	0.084	37,288	0.028	0.000
Couple w children <16y	0.197	97,706	0.189	37,288	-0.008	0.010
Couple w children ≥16y	0.151	97,706	0.147	37,288	-0.003	0.230
Couple w children ±16y	0.072	97,706	0.069	37,288	-0.003	0.092
Multi-generation	0.012	97,706	0.016	37,288	0.004	0.000
Other	0.010	97,706	0.012	37,288	0.002	0.021
<i>Stated risk preferences</i>						
General	4.801	85,339	4.358	31,690	-0.443	0.000
Driving	3.313	24,981	3.229	9,363	-0.084	0.009
Finance	2.427	26,094	2.355	9,861	-0.072	0.007
Sport/Leisure	3.785	26,241	3.612	9,840	-0.173	0.000
Occupation	3.810	23,249	3.758	9,009	-0.051	0.120
Health	3.083	26,525	3.182	10,010	0.099	0.001
Trust	3.580	26,550	3.338	10,031	-0.242	0.000

Notes: SOEPv33.1i 2002-2016. Means are for the pooled SOEP sample using years in which the MCS (Depression) is recorded (even years between 2002 and 2016). General willingness to take risks is for the even years excluding 2002. For other variables, means are for the years 2004 and 2014. P-values on differences are adjusted for individual clustering. See Appendix Table A2 for variable definitions.

Table A6

Depression and Behavioral Risk Preferences, Full Regression Results using the 2014 SOEP Risk Experiment.

	(1)	(2)	(3)
<i>Panel A: Non-parametric logit regressions</i>			
Depression	1.187 (0.126)	1.156 (0.127)	1.222* (0.146)
Male		1.174* (0.110)	1.232** (0.125)
Age		0.987 (0.015)	0.982 (0.016)
Age2		1.000 (0.000)	1.000 (0.000)
Log income		0.804** (0.089)	0.801* (0.095)
Edu. high		0.748*** (0.084)	0.761** (0.091)
Parent edu. high		0.967 (0.118)	0.968 (0.125)
German born		1.032 (0.157)	0.993 (0.167)
<i>Household type</i>			
Single		0.845 (0.233)	0.848 (0.259)
Couple w/o children		1.384 (0.366)	1.332 (0.399)
Single parent		1.448 (0.439)	1.313 (0.442)
Couple w children <16y		1.257 (0.354)	1.142 (0.359)
Couple w children ≥16y		1.012 (0.298)	0.924 (0.305)
Couple w children ±16y		1.364 (0.476)	1.345 (0.536)
Multi-generation		0.978 (0.596)	1.045 (0.659)
Observations	3,640	3,508	2,980
Clusters	910	877	745
<i>Panel B: Structural model estimates</i>			
Relative risk aversion (\hat{r} equation)			
Depression	-0.095 (0.062)	-0.086 (0.061)	-0.101* (0.057)
Male		-0.020 (0.015)	-0.027* (0.016)
Age		0.001 (0.002)	0.000 (0.003)
Age2		0.000	0.000

		(0.000)	(0.000)
Log income		0.027 (0.017)	0.025 (0.018)
Edu. high		0.066*** (0.020)	0.075*** (0.021)
Parent edu. high		0.005 (0.022)	0.003 (0.023)
German born		0.011 (0.023)	0.016 (0.025)
<i>Household type</i>			
Single		0.036 (0.045)	0.040 (0.047)
Couple w/o children		-0.013 (0.043)	-0.007 (0.046)
Single parent		-0.020 (0.048)	-0.018 (0.052)
Couple w children <16y		0.018 (0.046)	0.038 (0.049)
Couple w children ≥16y		0.029 (0.050)	0.032 (0.053)
Couple w children ±16y		0.033 (0.058)	0.043 (0.063)
Multi-generation		-0.048 (0.079)	-0.032 (0.080)
Constant	0.182*** (0.025)	-0.107 (0.137)	-0.012 (0.145)
Probability weighting factor ($\hat{\gamma}$ equation)			
Depression	0.093 (0.067)	0.091 (0.067)	0.111* (0.063)
Constant	0.832*** (0.027)	0.828*** (0.027)	0.730*** (0.023)
Controls	No	Yes	Yes
Obs.	10,920	10,524	8,940
Persons	910	877	745

Notes: SOEP-IS.2016.2 2014. Non-parametric regressions are binary logit regressions predicting whether the option chosen involved uncertainty (i.e., not option A). Odds ratios are presented. The $\hat{\gamma}$ equation in the structural model is the coefficient of relative risk aversion for a CRRA utility function (see Appendix B in the Online Appendix, equation (B.1)); the $\hat{\gamma}$ equation is the probability weighting factor in equation (B.3). Results in Column 3 exclude those who chose option C in scenario 4 (see Table 1). Standard errors are in parentheses and are clustered at the individual level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A7

Depression and Behavioral Risk Preferences, Regression Results using the 2014 SOEP Risk Experiment: Alternate MCS Threshold.

	(1)	(2)	(3)
<i>Panel A: Non-parametric logit regressions</i>			
Depression	1.187 (0.201)	1.076 (0.193)	1.079 (0.210)
Controls	No	Yes	Yes
Observations	3,640	3,508	2,980
Clusters	910	877	745
<i>Panel B: Structural model estimates</i>			
Relative risk aversion ($\hat{\rho}$ equation)			
Depression	-0.043 (0.084)	-0.017 (0.084)	-0.013 (0.069)
Constant	0.167*** (0.024)	-0.121 (0.137)	-0.024 (0.144)
Probability weighting factor ($\hat{\gamma}$ equation)			
Depression	0.005 (0.091)	-0.006 (0.092)	-0.026 (0.076)
Constant	0.849*** (0.026)	0.846*** (0.026)	0.753*** (0.023)
Controls	No	Yes	Yes
Obs.	10,920	10,524	8,940
Persons	910	877	745

Notes: SOEP-IS.2016.2 2014. Controls include the following: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)) and German born. Non-parametric regressions are binary logit regressions predicting whether the option chosen involved uncertainty (i.e., not option A). Odds ratios are presented. The $\hat{\rho}$ equation in the structural model is the coefficient of relative risk aversion for a CRRA utility function (see Appendix B in the Online Appendix, equation (B.1)); the $\hat{\gamma}$ equation is the probability weighting factor in equation (B.3). Results in column 3 exclude those who chose option C in scenario 4 (see Table 1). Standard errors are in parentheses and are clustered at the individual level. *** $p < 0.01$.

Table A8

Depression and Stated Willingness to Take Risks: General and Across Domains, Linear Fixed Effects Regression Results.

	General	Driving	Finance	Sport/ Leisure	Occupation	Health	Trust
Depression	-0.144*** (0.016)	0.065 (0.057)	0.046 (0.053)	0.053 (0.056)	0.069 (0.068)	0.050 (0.061)	0.008 (0.058)
Effect size	-0.031	0.021	0.021	0.015	0.019	0.017	0.002
Obs.	117,029	34,344	35,955	36,081	32,258	36,535	36,581
Persons	37,774	27,927	29,107	29,308	26,860	29,626	29,661

Notes: SOEPv33.1i 2004-2016. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. Effect sizes are calculated as $\hat{\beta}/\bar{y}$ where $\hat{\beta}$ is the estimated Depression coefficient and \bar{y} is the pooled sample mean for the relevant stated risk preference (the effect size is the percentage change from the mean associated with depression). All dependent variables are measured on a 0-10 scale with higher values indicating greater risk willingness. For the general domain {T} = 2004, 2006, 2008, 2010, 2012, 2014 and 2016. For the other domains {T} = 2004 and 2014. Note that for the fixed effects models, the effective sample size is 'Obs.' minus 'Clusters' for each specific domain (i.e., people appearing in both 2004 and 2014). Standard errors are in parentheses and are clustered at the individual level. *** $p < 0.01$.

Table A9

MCS score and Stated Willingness to Take Risks: General and Across Domains, Pooled OLS Results.

	General	Driving	Finance	Sport/ Leisure	Occupation	Health	Trust
<i>Panel A: No controls</i>							
MCS	0.024*** (0.001)	-0.000 (0.002)	0.001 (0.001)	0.003* (0.001)	-0.002 (0.002)	-0.010*** (0.001)	0.011*** (0.001)
<i>Panel B: With controls</i>							
MCS	0.022*** (0.001)	-0.003** (0.001)	-0.005*** (0.001)	0.003** (0.001)	-0.002 (0.001)	-0.011*** (0.001)	0.009*** (0.001)
Obs.	117,029	34,344	35,955	36,081	32,258	36,535	36,581
Persons	37,774	27,927	29,107	29,308	26,860	29,626	29,661

Notes: SOEPv33.1i 2004-2016. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. All dependent variables are measured on a 0-10 scale with higher values indicating greater risk willingness. For the general domain {T} = 2004, 2006, 2008, 2010, 2012, 2014 and 2016. For the other domains {T} = 2004 and 2014. Standard errors are in parentheses and are clustered at the individual level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10

Alternate MCS Threshold and Stated Willingness to Take Risks: General and Across Domains, Pooled OLS Results.

	General	Driving	Finance	Sport/ Leisure	Occupation	Health	Trust
<i>Panel A: No controls</i>							
MCS	-0.616*** (0.029)	-0.205*** (0.048)	-0.193*** (0.039)	-0.263*** (0.047)	-0.157*** (0.049)	0.027 (0.046)	-0.374*** (0.043)
<i>Panel B: With controls</i>							
MCS	-0.515*** (0.027)	-0.063 (0.045)	-0.026 (0.037)	-0.164*** (0.041)	-0.058 (0.045)	0.105** (0.044)	-0.287*** (0.042)
Obs.	117,029	34,344	35,955	36,081	32,258	36,535	36,581
Persons	37,774	27,927	29,107	29,308	26,860	29,626	29,661

Notes: SOEPv33.1i 2004-2016. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. All dependent variables are measured on a 0-10 scale with higher values indicating greater risk willingness. For the general domain {T} = 2004, 2006, 2008, 2010, 2012, 2014 and 2016. For the other domains {T} = 2004 and 2014. Standard errors are in parentheses and are clustered at the individual level. ** $p < 0.05$, *** $p < 0.01$.

Table A11

MCS Score and Risk-taking Behaviors in the Financial Domain.

	Risky assets	Risky assets	No supp. health ins.	No supp. health ins.
MCS	0.006*** (0.001)	0.001** (0.001)	-0.005*** (0.001)	-0.002*** (0.001)
<i>Average partial effect</i>	0.002*** (0.0001)	0.0003** (0.0002)	-0.001*** (0.0002)	-0.0004*** (0.0002)
Controls	No	Yes	No	Yes
Obs.	132,597	132,597	114,235	114,235
Persons	38,103	38,103	35,244	35,244
Pseudo R ²	0.001	0.127	0.001	0.100

Notes: SOEPv33.1i 2002-2016. Risky assets = 1 if household owns risky assets (i.e., securities other than fixed interest securities, such as shares and variable bonds). Mean = 0.314. No health insurance = 1 if not currently covered by a supplementary private health insurance policy. Mean = 0.805. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. Standard errors are in parentheses and are clustered at the individual level. Standard errors for average partial effects are calculated using the delta method. ** $p < 0.05$, *** $p < 0.01$.

Table A12

Alternate MCS Threshold and Risk-taking Behaviors in the Financial Domain.

	Risky assets	Risky assets	No supp. health ins.	No supp. health ins.
MCS	-0.183*** (0.016)	-0.067*** (0.016)	0.114*** (0.018)	0.035* (0.019)
<i>Average partial effect</i>	-0.006*** (0.005)	-0.020*** (0.005)	0.030*** (0.005)	0.009* (0.005)
Controls	No	Yes	No	Yes
Obs.	132,597	132,597	114,235	114,235
Persons	38,103	38,103	35,244	35,244
Pseudo R ²	0.001	0.127	0.001	0.100

Notes: SOEPv33.1i 2002-2016. Risky assets = 1 if household owns risky assets (i.e., securities other than fixed interest securities, such as shares and variable bonds). Mean = 0.314. No health insurance = 1 if not currently covered by a supplementary private health insurance policy. Mean = 0.805. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. Standard errors are in parentheses and are clustered at the individual level. Standard errors for average partial effects are calculated using the delta method. * $p < 0.10$, *** $p < 0.01$.

Table A13

MCS Score and Risk-taking Behaviors in the Health Domain.

	Smoker	Smoker	Poor diet	Poor diet	Sedentary	Sedentary
MCS	-0.009*** (0.001)	-0.005*** (0.001)	-0.006*** (0.0005)	-0.006*** (0.0005)	-0.012*** (0.001)	-0.012*** (0.001)
<i>Average partial effect:</i>						
Pr(Y = 1)	-0.003*** (0.0002)	-0.002*** (0.0002)	0.001*** (0.0001)	0.001*** (0.0001)	-0.005*** (0.0004)	-0.004*** (0.0004)
Pr(Y = 2)			0.002*** (0.0001)	0.001*** (0.0001)		
Pr(Y = 3)			-0.002*** (0.0001)	-0.002*** (0.0001)		
Pr(Y = 4)			-0.001*** (0.0001)	-0.001*** (0.0001)		
Controls	No	Yes	No	Yes	No	Yes
Obs.	118,999	118,999	96,172	96,172	15,045	15,045
Persons	38,287	38,287	33,915	33,915	15,045	15,045
Pseudo R ²	0.004	0.112	0.002	0.043	0.006	0.071

Notes: SOEPv33.1i 2002-2016. Smoker = 1 if current smoker. Mean = 0.308. Poor diet is a categorical variable (1-4 scale) indicating agreement to the statement that they follow a health-conscious diet (1 = strongly agree, 4 = not at all). The distribution from 1-4 is 0.092, 0.419, 0.429 and 0.060. Sedentary = 1 if participates in sports/exercise less than once per week. Mean = 0.581. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. For Poor diet, the average partial effects are the change in predicted probability for each of the four possible responses. Standard errors are in parentheses and are clustered at the individual level. Standard errors for average partial effects are calculated using the delta method. *** $p < 0.01$.

Table A14

Alternate MCS Threshold and Risk-taking Behaviors in the Health Domain.

	Smoker	Smoker	Poor diet	Poor diet	Sedentary	Sedentary
MCS	0.215*** (0.016)	0.165*** (0.017)	0.081*** (0.014)	0.095*** (0.014)	0.256*** (0.036)	0.236*** (0.037)
<i>Average partial effect:</i>						
Pr(Y = 1)	0.078*** (0.006)	0.053*** (0.006)	-0.013*** (0.002)	-0.014*** (0.002)	0.097*** (0.013)	0.084*** (0.013)
Pr(Y = 2)			-0.019*** (0.004)	-0.022*** (0.003)		
Pr(Y = 3)			0.022*** (0.004)	0.025*** (0.004)		
Pr(Y = 4)			0.010*** (0.002)	0.011*** (0.002)		
Controls	No	Yes	No	Yes	No	Yes
Obs.	118,999	118,999	96,172	96,172	15,045	15,045
Persons	38,287	38,287	33,915	33,915	15,045	15,045
Pseudo R ²	0.002	0.112	0.000	0.042	0.002	0.068

Notes: SOEPv33.1i 2002-2016. Smoker = 1 if current smoker. Mean = 0.308. Poor diet is a categorical variable (1-4 scale) indicating agreement to the statement that they follow a health-conscious diet (1 = strongly agree, 4 = not at all). The distribution from 1-4 is 0.092, 0.419, 0.429 and 0.060. Sedentary = 1 if participates in sports/exercise less than once per week. Mean = 0.581. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)), German born and year dummies. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. For Poor diet, the average partial effects are the change in predicted probability for each of the four possible responses. Standard errors are in parentheses and are clustered at the individual level. Standard errors for average partial effects are calculated using the delta method. *** $p < 0.01$.

Table A15

MCS Score and Risk-taking Behaviors in the Social Domain.

	Lend belongings	Lend belongings	Lend money	Lend money
MCS	0.000 (0.001)	0.003*** (0.001)	-0.008*** (0.001)	-0.006*** (0.001)
<i>Average partial effect:</i>				
Pr(Y = 1)	-0.0001 (0.0002)	-0.001*** (0.0002)	0.003*** (0.0004)	0.002*** (0.0004)
Pr(Y = 2)	-0.00005 (0.0001)	-0.0004*** (0.0001)	-0.001*** (0.0002)	-0.001*** (0.0002)
Pr(Y = 3)	0.00004 (0.0001)	0.0004*** (0.0001)	-0.001*** (0.0002)	-0.001*** (0.0002)
Pr(Y = 4)	0.0001 (0.0002)	0.001*** (0.0002)	-0.0004*** (0.0001)	-0.0003*** (0.00005)
Pr(Y = 5)	0.00002 (0.0001)	0.0002*** (0.0001)	-0.0001*** (0.00002)	-0.0001*** (0.00001)
Controls	No	Yes	No	Yes
Obs.	15,015	15,015	15,011	15,011
Persons	15,015	15,015	15,011	15,011
Pseudo R ²	0.000	0.058	0.002	0.078

Notes: SOEPv33.li 2008. Lend belongings is a categorical variable (1-5 scale) indicating the frequency at which the respondent lends belongings to friends (1 = never, 5 = very often). The distribution from 1-5 is 0.167, 0.296, 0.345, 0.160 and 0.032. Lend money is a categorical variable (1-5 scale) indicating the frequency at which the respondent lends money to friends (1 = never, 5 = very often). The distribution from 1-5 is 0.538, 0.319, 0.116, 0.023 and 0.004. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)) and German born. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. Robust standard errors are in parentheses. Standard errors for average partial effects are calculated using the delta method. *** $p < 0.01$.

Table A16

Alternate MCS Threshold and Risk-taking Behaviors in the Social Domain.

	Lend belongings	Lend belongings	Lend money	Lend money
MCS	-0.105*** (0.032)	-0.128** (0.032)	0.060* (0.033)	0.045 (0.034)
<i>Average partial effect:</i>				
Pr(Y = 1)	0.027*** (0.009)	0.030*** (0.008)	-0.024* (0.013)	-0.016 (0.012)
Pr(Y = 2)	0.014*** (0.004)	0.016*** (0.004)	0.010* (0.005)	0.007 (0.005)
Pr(Y = 3)	-0.014*** (0.005)	-0.016*** (0.004)	0.010* (0.006)	0.007 (0.005)
Pr(Y = 4)	-0.021*** (0.006)	-0.023*** (0.005)	0.003* (0.002)	0.002 (0.002)
Pr(Y = 5)	-0.007*** (0.002)	-0.008*** (0.002)	0.0008* (0.0005)	0.0005 (0.0004)
Controls	No	Yes	No	Yes
Obs.	15,015	15,015	15,011	15,011
Persons	15,015	15,015	15,011	15,011
Pseudo R ²	0.000	0.058	0.000	0.077

Notes: SOEPv33.li 2008. Lend belongings is a categorical variable (1-5 scale) indicating the frequency at which the respondent lends belongings to friends (1 = never, 5 = very often). The distribution from 1-5 is 0.167, 0.296, 0.345, 0.160 and 0.032. Lend money is a categorical variable (1-5 scale) indicating the frequency at which the respondent lends money to friends (1 = never, 5 = very often). The distribution from 1-5 is 0.538, 0.319, 0.116, 0.023 and 0.004. Controls include: sex, age, age², log monthly household income, own and parents' upper secondary education or higher, household type (single person; couple w/out children; single parent; couple with children <16y; couple with children 16y+; couple with children <16y and 16y+; multi-generation; other combination (ref. group)) and German born. Average partial effects are the sample mean change in the predicted probability when increasing MCS by one unit. Robust standard errors are in parentheses. Standard errors for average partial effects are calculated using the delta method. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A17

Unconditional Summary Statistics of Potential Mediators.

	Means		Difference (2) - (1)	Equality of means	
	Mentally Well (1)	Depressed (2)		t-stat.	p-value
Budget constraints and discounting					
Log permanent income	0.075	-0.193	-0.268	29.628	0.000
Patience	0.061	-0.158	-0.219	24.150	0.000
Time-inconsistent preferences					
Internal locus of control	0.154	-0.399	-0.553	62.780	0.000
Non-impulsivity	-0.021	0.054	0.075	-8.276	0.000
Conscientiousness	0.067	-0.173	-0.240	26.604	0.000
Emotions and expectations					
Emotional stability	0.175	-0.453	-0.628	71.969	0.000
Confidence in future	0.112	-0.289	-0.401	44.749	0.000
Prediction accuracy	0.080	-0.208	-0.288	32.035	0.000
Trust	0.084	-0.217	-0.301	33.313	0.000
Obs.	43,427	16,770			

Notes: SOEPv33.1i 2008-2016. All measures are standardized to mean of zero and variance one.

Table A18

Percentage Contribution to Mediation, Including General Cognitive Skills as a Mediator.

	Risky assets	No supp. health ins.	Smoker	Poor diet	Sedentary	Lend belongings	Lend money
Budget constraints and discounting							
Log permanent income	3.74	3.26	1.08	1.04	0.15	0.36	-0.90
Patience	-0.82	-2.54	2.55	4.42	1.35	5.19	-8.28
Time-inconsistent preferences							
Internal locus of control	25.68	59.73	-9.15	12.58	5.16	13.04	-6.80
Non-impulsivity	-0.32	7.37	-4.99	1.23	1.50	4.10	-8.52
Conscientiousness	-3.92	-7.90	-2.50	14.22	-0.73	1.38	8.02
Emotions and expectations							
Emotional Stability	14.39	-20.54	-15.93	-11.53	0.71	-10.43	-6.64
Confidence in future	12.48	39.73	14.76	11.63	4.64	4.12	1.75
Prediction accuracy	3.10	3.21	10.81	0.24	0.51	8.72	-6.99
Trust	11.68	22.11	16.73	10.47	9.05	33.71	-45.35
Cognitive skills	8.56	20.51	1.13	2.87	2.34	5.29	-8.79
Total	74.58	124.93	14.49	47.16	24.68	65.48	-82.50
Obs.	18,239	15,199	16,501	13,919	3,037	3,022	3,021
Persons	6,488	5,554	6,432	5,062	3,037	3,022	3,021

Notes: SOEPv33.1i 2008-2016. Only mediation results are displayed. Controls are included in each estimation.

Table A19

Percentage Contribution to Mediation, Including Stated Willingness to Take Risks as a Mediator.

	Risky assets	No supp. health ins.	Smoker	Poor diet	Sedentary	Lend belongings	Lend money
Budget constraints and discounting							
Log permanent income	8.90	5.44	1.37	1.13	1.56	3.04	-1.04
Patience	-7.49	-13.09	2.42	7.14	0.39	16.30	-11.06
Time-inconsistent preferences							
Internal locus of control	82.52	116.81	-0.98	7.28	14.29	20.49	-10.29
Non-impulsivity	-6.65	12.97	-7.84	-0.31	1.09	15.49	-4.14
Conscientiousness	-33.14	-17.06	-0.45	26.21	-2.39	-4.92	15.22
Emotions and expectations							
Emotional Stability	-37.09	-32.63	-27.72	-7.81	-0.90	-9.97	2.13
Confidence in future	30.60	17.76	15.32	6.56	5.49	7.68	-6.07
Prediction accuracy	4.71	0.12	17.56	0.49	7.09	9.95	-1.43
Trust	23.52	14.40	20.53	7.44	12.01	67.14	-20.97
General risk preference	9.86	10.18	-8.64	2.07	3.36	18.07	-15.73
Total	75.75	114.90	11.57	50.21	41.99	143.27	-53.39
Obs.	51,041	42,602	46,204	42,295	11,889	11,868	11,864
Persons	15,797	13,581	15,774	14,623	11,889	11,868	11,864

Notes: SOEPv33.1i 2008-2016. Only mediation results are displayed. Controls are included in each estimation.

Table A20

Percentage Contribution to Mediation, Excluding Log Current Income.

	Risky assets	No supp. health ins.	Smoker	Poor diet	Sedentary	Lend belongings	Lend money
Budget constraints and discounting							
Log permanent income	58.02	59.60	16.79	10.82	18.61	26.48	-22.26
Patience	-2.79	-4.28	1.97	6.21	0.44	11.50	-15.59
Time-inconsistent preferences							
Internal locus of control	33.87	39.56	-1.74	7.09	12.75	16.71	-17.44
Non-impulsivity	-2.05	4.85	-8.47	0.05	2.07	16.53	-14.45
Conscientiousness	-12.48	-5.26	-0.41	23.53	-1.96	-3.40	20.18
Emotions and expectations							
Emotional Stability	-12.14	-7.91	-25.84	-6.19	0.27	-2.59	-4.58
Confidence in future	13.76	7.47	12.79	6.44	5.45	8.78	-13.90
Prediction accuracy	2.18	0.61	15.69	0.52	6.07	7.08	-2.03
Trust	9.73	5.02	18.15	7.32	10.52	49.51	-31.38
Total	88.09	99.65	28.92	55.79	54.20	130.60	-101.45
Obs.	51,178	42,707	46,332	42,418	11,892	11,871	11,867
Persons	15,801	13,583	15,778	14,630	11,892	11,871	11,867

Notes: SOEPv33.1i 2008-2016. Only mediation results are displayed. Controls are included in each estimation except for current log income.

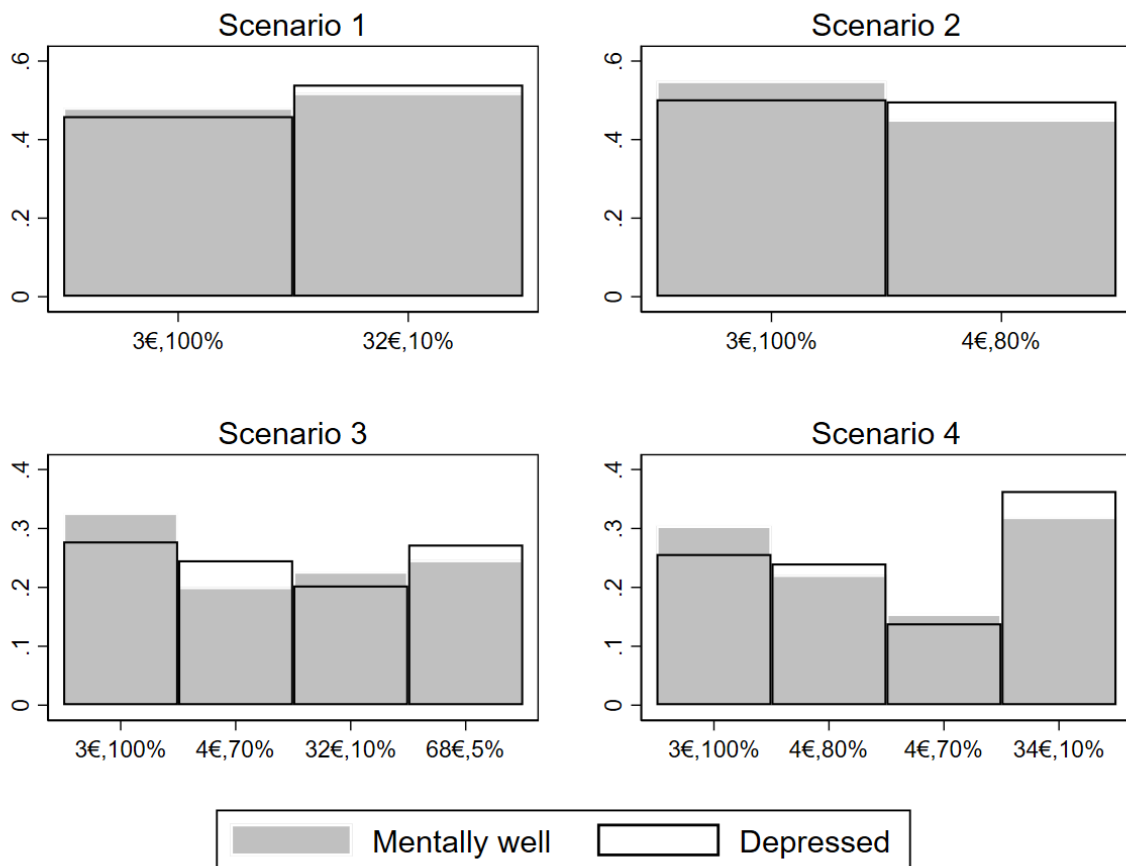


Figure A1:

Choice Distributions Associated with the 2014 SOEP Risk Experiment.

Notes: SOEP-IS.2016.2 2014. Each scenario includes 910 participants. The labels on the x-axis are the payoffs (in euros) and probabilities (in %) for the favorable outcome (unfavorable outcomes pay nothing). The choices are generally similar for those who are depressed vs. mentally well. Mann-Whitney tests fail to reject the null of equal distribution in all scenarios.

Appendix B — Details on Estimation of Experimental Data (Section III.A)

Structural estimation of the utility function

In Section III.A we conduct structural estimation of a model in which people's choices are made so as to maximize the following constant relative risk aversion expected utility function:

$$(B.1) \quad E[U] = \pi_{j,s} \cdot \frac{(W + B_{j,s})^{1-r}}{1-r}$$

In equation (B.1), r is the coefficient of relative risk aversion (risk aversion is increasing in r), W is a reference point (which we set to zero), $B_{j,s}$ is the payoff from a favorable outcome of choice j in scenario s and $\pi_{j,s}$ is the probability associated with the favorable outcome. Note that the payoff for unfavorable outcomes is always zero.

In each scenario, people are assumed to evaluate the expected utility of each option and choose an option if $E[U|choice = j] + \varepsilon_{i,j} > E[U|choice = k] + \varepsilon_{i,k} \forall k \neq j$ where $\varepsilon_{i,j}$ and $\varepsilon_{i,k}$ are random error terms associated with options j and k respectively, which are assumed to follow a standard type I extreme value distribution. This implies that r can be estimated by maximum likelihood with the probabilities of choosing option j in scenario s given by:

$$(B.2) \quad P_{j,s} = \frac{\exp\left(\pi_{j,s} \cdot \frac{B_{j,s}^{1-r}}{1-r}\right)}{\sum_{j=1}^J \exp\left(\pi_{j,s} \cdot \frac{B_{j,s}^{1-r}}{1-r}\right)}$$

As demonstrated in Kahneman and Tversky (1979), people frequently overweight low-probability events, which can affect estimates of r . A popular strategy for accounting for this is to adopt a rank-dependent expected utility model in which people use non-linear transformations of the probabilities when evaluating options (see Quiggin 1982; Yaari 1987). We use the weighting function of Tversky and Kahneman (1992) and replace $\pi_{j,s}$ with

$$(B.3) \quad w_{j,s} = \pi_{j,s}^\gamma / \left(\pi_{j,s}^\gamma + (1 - \pi_{j,s}^\gamma)\right)^{\frac{1}{\gamma}}$$

in equation (B.2), where γ is a new parameter to be estimated. If $\gamma < 1$, then the weighting function follows an inverse S-shape, which gives higher (lower) weight to low (high) probability outcomes. In our estimation we allow for both r and γ to depend on depression-risk (along with a host of other observables).

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