Appendix A: Additional tables and figures

Table A1: Descriptive statistics

	N	Mean	SD	Min	Max
Enjoyment	2846	3.51	1.16	1	7
Development	2845	3.57	1.28	1	7
Winning	2844	3.69	1.23	1	7
Challenge	2851	4.61	1.21	1	7
Competitiveness (gen)	2870	6.04	2.05	0	10
Extraversion	2777	3.19	0.69	1.1	5
Agreeableness	2777	3.82	0.55	1.3	5
Conscientiousness	2777	3.76	0.52	2	5
Stability	2777	3.44	0.74	1.1	5
Openness	2777	3.54	0.51	1	5
Risk taking	2869	5.25	1.97	0	10
Confidence	2853	5.23	1.21	1	7
Grit	2835	3.58	0.52	1.5	5
Machiavellianism	2210	2.52	1.43	1	9
Psychopathy	2210	3.42	1.47	1	9
Narcissism	2209	3.21	1.52	1	9
Need for cognition	2208	4.58	1.10	1	7
Cognitive reflection	2204	1.17	1.13	0	3
Reciprocity (neg)	2831	4.32	2.35	0	10
Trust	2863	6.18	1.98	0	10
Prosociality	2831	6.96	1.74	0	10
Punishment (3rd party)	2831	4.84	2.47	0	10
Income	2709	2890.4	1907.8	0	19960.3
Happiness	2733	7.29	1.45	0	10
Career satisfaction	2279	7.35	1.23	0	10
Closeness	2775	4.29	1.60	1	7
Management	2797	0.096	0.29	0	1
Supervisor	2797	0.24	0.43	0	1
Professional	2797	0.12	0.33	0	1
Entrepreneur	2537	0.013	0.12	0	1
Self-employed	2537	0.098	0.30	0	1
Depression	2767	0.063	0.24	0	1
Sports	2804	0.59	0.49	0	1

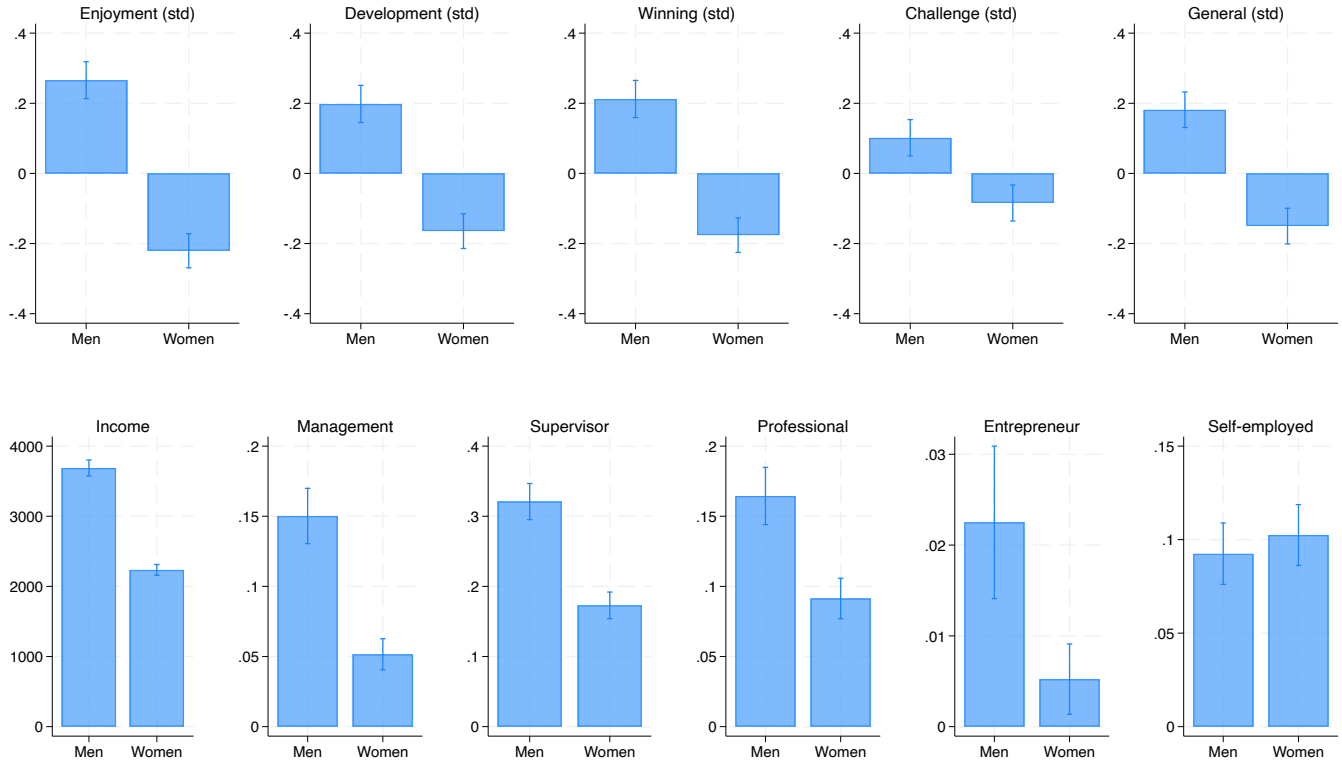
Note: This table shows summary statistics for all trait and outcome variables for the subsample of working age (between 25 and 65 years old) individuals.

Figure A1: Correlations between the three dimensions of competitiveness and challenge seeking



Sample: working age individuals (between 25 and 65 years old).

Figure A2: Gender differences in competitiveness and labor market outcomes



Note: The graphs show averages of standardized competitiveness measures (upper panel) and labor market outcomes (lower panel) by gender, using the subsample of working age (between 25 and 65 years old) individuals. The error bars represent 95-percent confidence intervals.

Appendix B: Regression tables (life outcomes)

Table B1: Income

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.106***				0.080***
		(0.015)				(0.024)
Development			0.062***			-0.058**
			(0.013)			(0.024)
Winning				0.093***		0.053***
				(0.014)		(0.019)
Challenge					0.133***	0.106***
					(0.014)	(0.014)
Female	-0.749***	-0.687***	-0.719***	-0.702***	-0.715***	-0.676***
	(0.033)	(0.033)	(0.034)	(0.033)	(0.032)	(0.033)
Adjusted R^2	0.303	0.316	0.308	0.314	0.327	0.333
N	2679	2679	2679	2679	2679	2679
Dif		-0.082	-0.040	-0.062	-0.045	-0.096
P-val		0.000	0.000	0.000	0.000	0.000

Table B2: Happiness

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.089***				0.155***
		(0.019)				(0.028)
Development			0.011			-0.066***
			(0.017)			(0.025)
Winning				-0.016		-0.118***
				(0.019)		(0.024)
Challenge					0.158***	0.168***
					(0.020)	(0.020)
Female	0.065*	0.116***	0.071*	0.057	0.102***	0.104***
	(0.038)	(0.040)	(0.040)	(0.040)	(0.038)	(0.040)
Adjusted R^2	0.010	0.020	0.010	0.010	0.044	0.064
N	2706	2706	2706	2706	2706	2706
Dif		0.780	0.081	-0.122	0.559	0.588
P-val		0.000	0.519	0.387	0.000	0.006

Table B3: Career satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.023				0.075**
		(0.020)				(0.030)
Development			-0.026			-0.064**
			(0.019)			(0.029)
Winning				-0.032		-0.070**
				(0.020)		(0.029)
Challenge					0.112***	0.131***
					(0.021)	(0.022)
Female	0.003	0.017	-0.011	-0.015	0.027	0.007
	(0.041)	(0.043)	(0.042)	(0.042)	(0.041)	(0.043)
Adjusted R^2	0.018	0.018	0.018	0.019	0.033	0.042
N	2261	2261	2261	2261	2261	2261
Dif		5.423	-5.057	-6.549	9.357	1.676
P-val		0.260	0.166	0.110	0.000	0.762

Table B4: Closeness

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.076***				0.100***
		(0.018)				(0.027)
Development			0.037**			0.008
			(0.016)			(0.027)
Winning				-0.002		-0.094***
				(0.017)		(0.025)
Challenge					0.079***	0.075***
					(0.017)	(0.019)
Female	0.296***	0.339***	0.314***	0.295***	0.314***	0.329***
	(0.038)	(0.039)	(0.038)	(0.039)	(0.038)	(0.039)
Adjusted R^2	0.040	0.047	0.041	0.039	0.048	0.057
N	2748	2748	2748	2748	2748	2748
Dif		0.146	0.059	-0.004	0.061	0.108
P-val		0.000	0.027	0.903	0.001	0.006

Table B5: Management

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.019***				0.009
		(0.005)				(0.007)
Development			0.013***			-0.009
			(0.004)			(0.007)
Winning				0.021***		0.015**
				(0.005)		(0.006)
Challenge					0.027***	0.022***
					(0.005)	(0.005)
Female	-0.095***	-0.084***	-0.089***	-0.085***	-0.089***	-0.082***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Adjusted R^2	0.086	0.091	0.089	0.093	0.097	0.099
N	2769	2769	2769	2769	2769	2769
Dif		-0.114	-0.066	-0.109	-0.068	-0.140
P-val		0.000	0.003	0.000	0.000	0.000

Table B6: Supervisor

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.054***				0.029***
		(0.007)				(0.010)
Development			0.042***			-0.007
			(0.006)			(0.011)
Winning				0.053***		0.028***
				(0.007)		(0.009)
Challenge					0.055***	0.038***
					(0.006)	(0.007)
Female	-0.149***	-0.118***	-0.129***	-0.123***	-0.136***	-0.113***
	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)
Adjusted R^2	0.045	0.064	0.059	0.065	0.067	0.078
N	2769	2769	2769	2769	2769	2769
Dif		-0.209	-0.131	-0.172	-0.089	-0.240
P-val		0.000	0.000	0.000	0.000	0.000

Table B7: Professional

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.006				0.008
		(0.005)				(0.007)
Development			0.002			-0.003
			(0.004)			(0.008)
Winning				0.001		-0.003
				(0.005)		(0.006)
Challenge					0.007*	0.007
					(0.004)	(0.005)
Female	-0.061***	-0.058***	-0.061***	-0.061***	-0.060***	-0.058***
	(0.011)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)
Adjusted R^2	0.246	0.246	0.246	0.246	0.246	0.246
N	2769	2769	2769	2769	2769	2769
Dif		-0.052	-0.014	-0.011	-0.028	-0.049
P-val		0.246	0.666	0.771	0.104	0.310

Table B8: Entrepreneur

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.004**				0.003
		(0.002)				(0.003)
Development			0.003*			-0.000
			(0.002)			(0.003)
Winning				0.003*		0.001
				(0.002)		(0.002)
Challenge					0.003	0.001
					(0.002)	(0.002)
Female	-0.015***	-0.013***	-0.014***	-0.014***	-0.015***	-0.013***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
Adjusted R^2	0.016	0.017	0.017	0.017	0.016	0.016
N	2514	2514	2514	2514	2514	2514
Dif		-0.162	-0.096	-0.105	-0.037	-0.171
P-val		0.012	0.101	0.089	0.148	0.016

Table B9: Self-employed

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.001				-0.002
		(0.006)				(0.008)
Development			-0.000			-0.007
			(0.005)			(0.008)
Winning				0.005		0.008
				(0.005)		(0.008)
Challenge					0.007	0.007
					(0.005)	(0.006)
Female	0.013	0.013	0.013	0.015	0.014	0.014
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Adjusted R^2	0.008	0.008	0.008	0.008	0.008	0.008
N	2514	2514	2514	2514	2514	2514
Dif		0.027	-0.017	0.194	0.121	0.119
P-val		0.916	0.927	0.347	0.178	0.658

Table B10: Depression

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		-0.017***				-0.028***
		(0.005)				(0.007)
Development			-0.005			0.008
			(0.004)			(0.006)
Winning				0.000		0.016***
				(0.004)		(0.006)
Challenge					-0.017***	-0.015***
					(0.005)	(0.005)
Female	0.033***	0.024**	0.031***	0.034***	0.030***	0.026***
	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)	(0.010)
Adjusted R^2	0.010	0.016	0.010	0.009	0.016	0.023
N	2739	2739	2739	2739	2739	2739
Dif		-0.295	-0.073	0.001	-0.113	-0.229
P-val		0.000	0.224	0.987	0.005	0.011

Table B11: Sports

	(1)	(2)	(3)	(4)	(5)	(6)
Enjoyment		0.049***				0.038***
		(0.008)				(0.012)
Development			0.031***			-0.024*
			(0.007)			(0.012)
Winning				0.045***		0.029***
				(0.008)		(0.011)
Challenge					0.047***	0.032***
					(0.008)	(0.009)
Female	-0.012	0.015	0.003	0.010	-0.001	0.020
	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)	(0.019)
Adjusted R^2	0.067	0.079	0.072	0.078	0.079	0.086
N	2776	2776	2776	2776	2776	2776
Dif		-2.299	-1.214	-1.871	-0.906	-2.656
P-val		0.000	0.000	0.000	0.000	0.000

Appendix C: Regression tables (other individual traits)

Table C1: Risk taking

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.270***				0.167***
	(0.013)				(0.020)
Development		0.199***			-0.007
		(0.013)			(0.020)
Winning			0.200***		0.006
			(0.013)		(0.018)
Challenge				0.316***	0.256***
				(0.012)	(0.014)
Adjusted R^2	0.120	0.091	0.086	0.169	0.197
N	4999	4999	4999	4999	4999

Table C2: Confidence

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.146***				0.101***
	(0.014)				(0.021)
Development		0.075***			-0.083***
		(0.013)			(0.020)
Winning			0.089***		-0.049***
			(0.014)		(0.019)
Challenge				0.337***	0.351***
				(0.013)	(0.014)
Adjusted R^2	0.041	0.024	0.026	0.171	0.180
N	4999	4999	4999	4999	4999

Table C3: Reciprocity (neg)

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.191***				0.040**
	(0.014)				(0.020)
Development		0.193***			0.051**
		(0.012)			(0.020)
Winning			0.235***		0.183***
			(0.013)		(0.019)
Challenge				0.082***	-0.023
				(0.013)	(0.014)
Adjusted R^2	0.103	0.114	0.133	0.068	0.137
N	4981	4981	4981	4981	4981

Table C4: Trust

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.079***				0.070***
	(0.014)				(0.021)
Development		0.050***			0.035*
		(0.013)			(0.020)
Winning			0.000		-0.127***
			(0.014)		(0.019)
Challenge				0.141***	0.152***
				(0.014)	(0.015)
Adjusted R^2	0.016	0.012	0.009	0.036	0.047
N	4997	4997	4997	4997	4997

Table C5: Prosociality

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.037***				-0.069***
	(0.014)				(0.021)
Development		0.057***			0.033
		(0.013)			(0.021)
Winning			0.071***		0.024
			(0.014)		(0.020)
Challenge				0.153***	0.156***
				(0.014)	(0.015)
Adjusted R^2	0.007	0.010	0.012	0.037	0.039
N	4981	4981	4981	4981	4981

Table C6: Punishment (3rd party)

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.165***				0.027
	(0.014)				(0.021)
Development		0.163***			0.052**
		(0.012)			(0.020)
Winning			0.181***		0.091***
			(0.013)		(0.020)
Challenge				0.154***	0.089***
				(0.013)	(0.015)
Adjusted R^2	0.072	0.078	0.083	0.071	0.097
N	4981	4981	4981	4981	4981

Table C7: Need for cognition

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.132***				-0.022
	(0.015)				(0.020)
Development		0.106***			-0.042**
		(0.014)			(0.021)
Winning			0.147***		0.011
			(0.014)		(0.018)
Challenge				0.411***	0.431***
				(0.013)	(0.014)
Adjusted R^2	0.053	0.049	0.061	0.269	0.272
N	3925	3925	3925	3925	3925

Table C8: Cognitive reflection

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.004				-0.037*
	(0.014)				(0.022)
Development		0.015			0.007
		(0.013)			(0.022)
Winning			0.027**		0.024
			(0.013)		(0.020)
Challenge				0.046***	0.048***
				(0.013)	(0.014)
Adjusted R^2	0.071	0.071	0.072	0.074	0.074
N	3917	3917	3917	3917	3917

Table C9: Grit

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.021				0.037*
	(0.014)				(0.020)
Development		-0.040***			-0.164***
		(0.013)			(0.020)
Winning			0.009		-0.019
			(0.014)		(0.019)
Challenge				0.265***	0.321***
				(0.013)	(0.014)
Adjusted R^2	0.042	0.044	0.042	0.139	0.169
N	4985	4985	4985	4985	4985

Table C10: Extraversion

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.235***				0.252***
	(0.014)				(0.020)
Development		0.119***			-0.129***
		(0.012)			(0.020)
Winning			0.143***		0.006
			(0.013)		(0.019)
Challenge				0.253***	0.208***
				(0.013)	(0.014)
Adjusted R^2	0.067	0.021	0.027	0.088	0.122
N	4872	4872	4872	4872	4872

Table C11: Agreeableness

	(1)	(2)	(3)	(4)	(5)
Enjoyment	-0.005				-0.010
	(0.013)				(0.020)
Development		-0.020*			-0.028
		(0.012)			(0.019)
Winning			-0.029**		-0.083***
			(0.013)		(0.019)
Challenge				0.154***	0.201***
				(0.012)	(0.014)
Adjusted R^2	0.091	0.092	0.092	0.124	0.137
N	4872	4872	4872	4872	4872

Table C12: Conscientiousness

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.070***				-0.018
	(0.014)				(0.020)
Development		0.062***			-0.015
		(0.012)			(0.020)
Winning			0.086***		0.025
			(0.013)		(0.018)
Challenge				0.200***	0.203***
				(0.012)	(0.014)
Adjusted R^2	0.036	0.036	0.040	0.086	0.086
N	4872	4872	4872	4872	4872

Table C13: Stability

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.103***				0.234***
	(0.013)				(0.020)
Development		-0.013			-0.132***
		(0.012)			(0.019)
Winning			-0.044***		-0.172***
			(0.013)		(0.018)
Challenge				0.185***	0.218***
				(0.013)	(0.014)
Adjusted R^2	0.094	0.081	0.083	0.128	0.178
N	4872	4872	4872	4872	4872

Table C14: Openness

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.112***				-0.004
	(0.013)				(0.019)
Development		0.084***			-0.044**
		(0.012)			(0.019)
Winning			0.115***		0.001
			(0.013)		(0.017)
Challenge				0.351***	0.369***
				(0.012)	(0.013)
Adjusted R^2	0.037	0.033	0.040	0.192	0.194
N	4872	4872	4872	4872	4872

Table C15: Machiavellianism

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.144***				0.015
	(0.014)				(0.021)
Development		0.163***			0.083***
		(0.013)			(0.021)
Winning			0.182***		0.145***
			(0.013)		(0.019)
Challenge				0.018	-0.078***
				(0.013)	(0.014)
Adjusted R^2	0.142	0.156	0.162	0.117	0.173
N	3929	3929	3929	3929	3929

Table C16: Psychopathy

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.071***				0.048**
	(0.015)				(0.023)
Development		0.058***			-0.006
		(0.013)			(0.023)
Winning			0.072***		0.057***
			(0.015)		(0.021)
Challenge				0.017	-0.021
				(0.014)	(0.015)
Adjusted R^2	0.065	0.064	0.066	0.059	0.067
N	3929	3929	3929	3929	3929

Table C17: Narcissism

	(1)	(2)	(3)	(4)	(5)
Enjoyment	0.204***				-0.028
	(0.014)				(0.021)
Development		0.246***			0.140***
		(0.013)			(0.021)
Winning			0.276***		0.205***
			(0.013)		(0.019)
Challenge				0.086***	-0.040***
				(0.013)	(0.014)
Adjusted R^2	0.122	0.160	0.174	0.081	0.186
N	3926	3926	3926	3926	3926

Appendix D: Main results when not using the pain-of-losing question

Table D1: What is picked up by standard measures of competitiveness?

	(1) Survey	(2) Survey	(3) Survey	(4) Survey	(5) Choice	(6) Choice	(7) Choice	(8) Choice
Enjoyment	0.253***	0.224***	0.185***	0.166***	0.049**	0.050**	0.053**	0.048**
	(0.028)	(0.028)	(0.029)	(0.030)	(0.020)	(0.020)	(0.021)	(0.022)
Development	-0.108***	-0.106***	-0.102***	-0.085***	-0.041*	-0.041*	-0.044*	-0.048**
	(0.030)	(0.030)	(0.030)	(0.030)	(0.023)	(0.023)	(0.023)	(0.024)
comp_winning_alt	0.288***	0.278***	0.279***	0.260***	0.037*	0.038*	0.034*	0.042**
	(0.029)	(0.029)	(0.028)	(0.029)	(0.020)	(0.020)	(0.020)	(0.021)
Challenge		0.132***	0.074***	0.054**		-0.003	0.006	0.001
		(0.021)	(0.023)	(0.025)		(0.015)	(0.016)	(0.018)
Adjusted R^2	0.201	0.210	0.230	0.241	0.082	0.081	0.082	0.098
N	3136	3136	3136	3136	1155	1155	1155	1155
Risk and confidence			x	x			x	x
Personality traits				x				x
Score controls					x	x	x	x

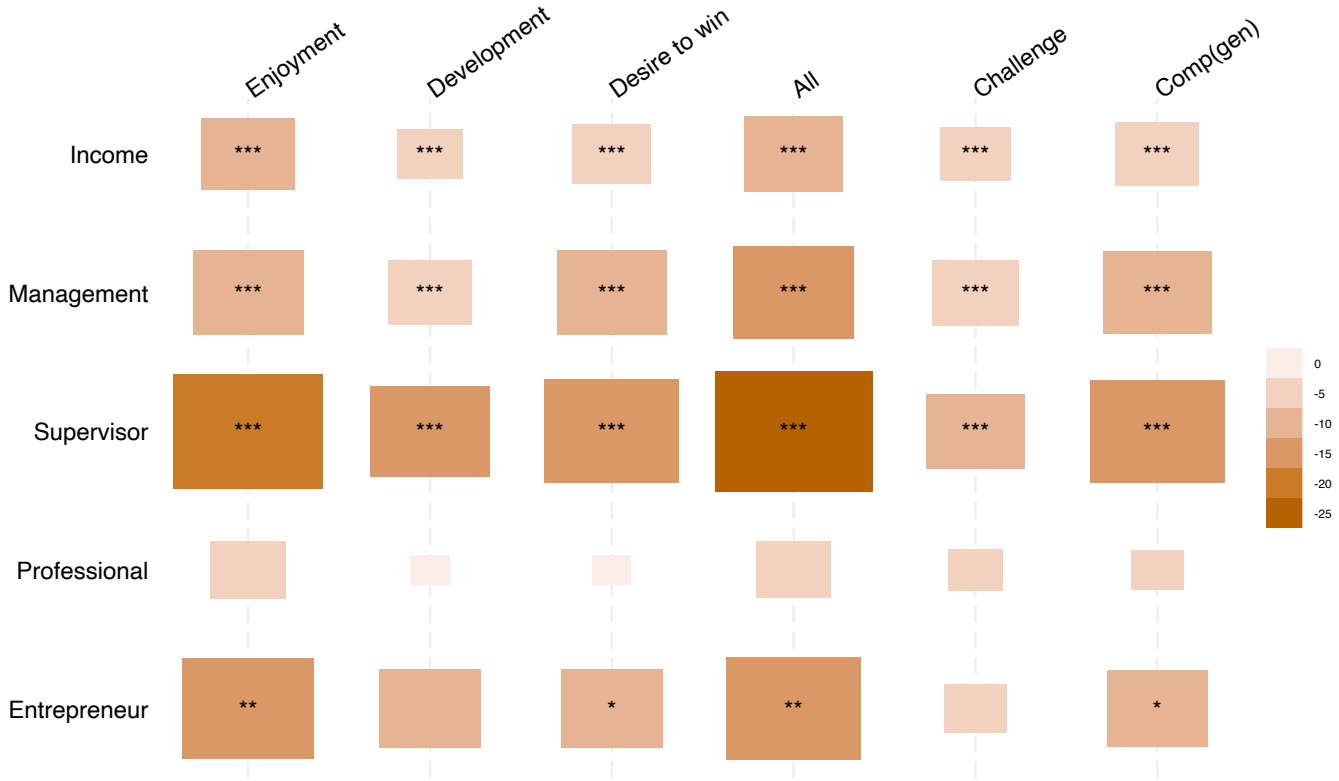
Note: The table shows OLS regressions of the standardized single-item survey measure of competitiveness (columns 1 to 4) and the incentivized tournament choice (columns 5 to 8) on the new competitiveness measures. The single-item survey measure and the incentivized choice measure were collected on the LISS panel by Buser, Niederle, and Oosterbeek (2024) in 2017 and 2018 respectively. Both Personality controls include grit, extraversion, agreeableness, conscientiousness, stability, and openness. Columns 5 to 8 control for performance in the two baseline rounds of the experiment.

Figure D1: Conditional correlations between competitiveness and life outcomes



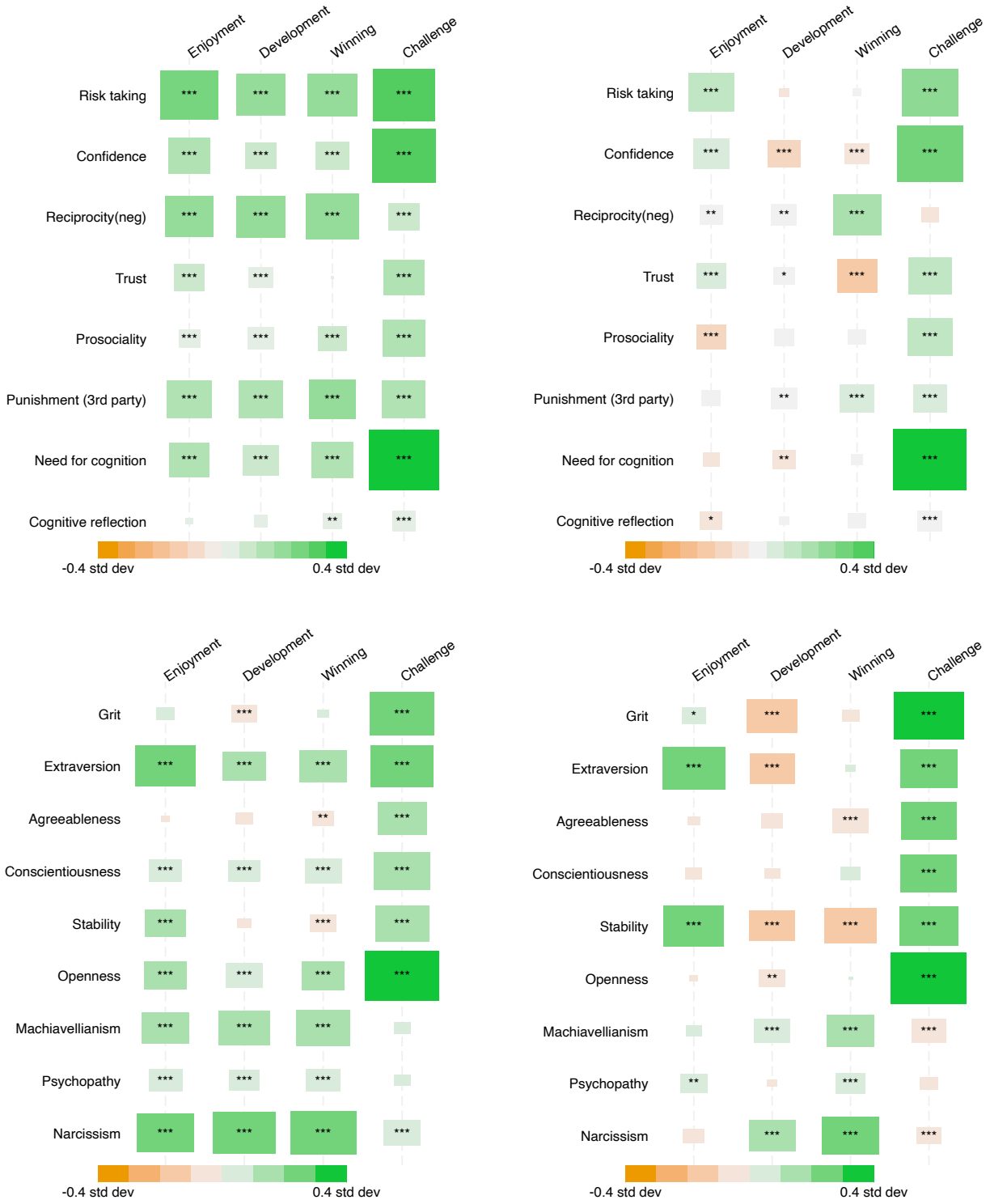
Note: The conditional correlations represented in the graphs are obtained from OLS regressions of outcomes on the standardized competitiveness measures. Outcomes in the top two graphs are continuous and standardized. Outcomes in the bottom two graphs are binary and effects are scaled by dividing by the sample mean of the outcome variable. The left-hand side graphs show results from regressions that include the the competitiveness and challenge seeking measures individually, controlling for age, gender, and education level. The right-hand side graphs show results from regressions that include all four measures simultaneously, controlling for age, gender, and education level. The sample is restricted to individuals who are between 25 and 65 years old. Significance levels are based on robust standard errors; $*$ p<0.10,** p<0.05,*** p<0.01. See the tables in Appendix B for the underlying regression coefficients.

Figure D2: Explanatory power of competitiveness for gender gaps in labor market outcomes



Note: The graph shows the explanatory power of different competitiveness measures for gender gaps in labor market outcomes. The squares represent the difference (in percent) in the gender gap in labor market outcomes between OLS regressions that do and do not include the various measures of competitiveness. Significance stars represent the level of statistical significance of the difference in the gender coefficient between the regressions with and without competitiveness measures included (using Stata's suest command); $*$ $p<0.10$,$**$ $p<0.05$,$***$ $p<0.01$. The sample is restricted to individuals who are between 25 and 65 years old. All regressions control for age, age squared and education level dummies. See the tables in Appendix B for the underlying regression coefficients.

Figure D3: Conditional correlations between competitiveness and other psychological traits



Note: The conditional correlations represented in the graphs are obtained from OLS regressions of trait measures on the four standardized competitiveness and challenge seeking measures. The dependent variables are standardized. The left-hand side graphs show results from regressions that include the four measures individually, controlling for age and gender. The right-hand side graphs show results from regressions that include all four measures simultaneously, controlling for age and gender. Significance levels are based on robust standard errors; $*$ $p<0.10$,$**$ $p<0.05$,$***$ $p<0.01$. See the tables in Appendix C for the underlying regression coefficients.