

ONLINE APPENDICES

for

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“Diverging associations of dimensions of competitiveness with gender and personality.”

Personality and Individual Differences

Appendix A: Overview of competitiveness items and confirmatory factor analysis

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Appendix A: Overview of competitiveness items and confirmatory factor analysis

Text (English and Colombian Spanish)	Source	Loading	
<i>Enjoyment of competition</i> ($\alpha=0.84$, $cr=0.68$)			
2-EC1: I enjoy competing against others	Disfruto competir con otros.	Bönte et al. (2017a), Newby & Klein (2014)	0.90
3-EC2: I prefer competing with others when pursuing a goal over pursuing the goal alone.	Prefiero competir con otros al perseguir un objetivo a perseguir el objetivo yo solo.	Bönte et al. (2017a)	0.52
4-EC3: I like situations in which I compete with others	Me gustan las situaciones en las que compito con otros.	Bönte et al. (2017a), Bönte & Piegeler, (2013)	0.92
5-EC4: I find competitive situations unpleasant.	No encuentro placenteras las situaciones de competencia.	Bönte et al. (2017a), Smither & Houston (1992)	-0.70
<i>Personal development motives</i> ($\alpha=0.83$, $cr=0.70$)			
6-PD1: Competition allows me to measure my own success	La competencia me permite medir mi propio éxito.	Newby & Klein (2014)	0.79
7-PD2: Competition allows me to judge my level of competence	La competencia me permite juzgar mi nivel de competencias/ habilidades.	Newby & Klein (2014)	0.79
8-PD3: I use competition as a way to prove something to myself.	Uso la competencia como una forma de probarme algo a mí mismo/a.	Newby & Klein (2014)	0.75
9-PD4: I can improve my competence by competing.	Puedo mejorar mis competencias/ habilidades al competir.	Newby & Klein (2014)	0.66
<i>Desire to win</i> ($\alpha=0.81$, $cr=0.69$)			
10-DW1: I often try to outperform others	A menudo, trato de ser mejor que los demás.	Smither & Houston (1992)	0.79
18-DW2: I want to win in both work and games.	Quiero ganar tanto en el trabajo como en los juegos.	Adapted from Spence & Helmreich (1983)	0.63
19-DW3: I try to be the best person in the room at almost anything.	Busco ser la mejor persona del lugar en casi todo.	Newby & Klein (2015)	0.71
20-DW4: It is important for me to outperform others.	Para mí es importante desempeñarme mejor que los demás.	Spence & Helmreich (1983)	0.77

Notes. N= 1,520. Table reports coefficient alpha (α) and composite reliability (cr) for the competitiveness dimensions. Factor loadings from the confirmatory factor analysis reported are last column; fit indices for confirmatory factor analysis: $\chi^2(df=51)=309.450$, $p<0.001$, CFI=0.972, SRMR=0.047, RMSEA=0.058 with $CI_{90\%}=[0.052,0.064]$. The one-dimensional model, all items loading on a single latent factor, first significantly worse than the one-dimensional model: $\chi^2(df=54)=2014.69$, $p<0.001$, CFI=0.785, SRMR=0.085, RMSEA=0.155 with $CI_{90\%}=[0.149,0.160]$, Likelihood ratio test for difference to three-dimensional model: $\chi^2(3)=1705.25$, $p<0.001$.

Appendix B: Relationship of the three dimensions to two related competitiveness measures

To compare our multi-dimensional measure of competitiveness with related scales, we included the 9-item subscale on ‘Enjoyment of Competition’ ($\alpha=0.90$) from Houston and colleagues’ (2002a) Competitiveness Index. From Helmreich and Spence’s (1978) Work and Family Orientation Scale, we also included the subscale ‘Competitiveness’ ($\alpha=0.72$), which should be related to all three of our dimensions (Houston et al., 2002b, Bönnte et al., 2017b). Since one item from the WOFO subscale refers to world beliefs as beliefs and feelings regarding issues generalized beyond the own person, i.e., “I feel that winning is important in both work and games”, we adapted the item to reflect self-evaluations only: “I want to win in both work and games.” An exploratory factor analysis with oblique rotation (PROMAX, reported in the following table) indicates that the three dimensions separate relatively well. As expected, the items from Houston and colleagues’ (2002a) enjoyment of competition generally load on the enjoyment of competition dimension. Only one item refers to and correspondingly load on the dimension desire to win, which suggests that this item should be removed from Houston and colleagues’ scale.

Survey id	Variable	Factor loadings		
		1	2	3
2) I enjoy competing against others.	EC1	0.83		
3) I prefer competing with others when pursuing a goal over pursuing the goal alone.	EC2	0.34		
4) I like situations in which I compete with others.	EC3	0.83		
5) I find competitive situations unpleasant.	EC4, CI1	-0.82		
6) Competition allows me to measure my own success.	PD1		0.72	
7) Competition allows me to judge my level of competence.	PD2		0.76	
8) I use competition as a way to prove something to myself.	PD3		0.61	
9) I can improve my competence by competing.	PD4		0.51	
10) I often try to outperform others.	DW1, CI2			0.70
18) I want to win in both work and games.	DW2			0.49
19) I try to be the best person in the room at almost anything.	DW3			0.69
20) It is important for me to outperform others.	DW4, WOFO-1			0.68
11) I like competition.	CI3	0.78		
12) I don’t like competing against other people.	CI4	-0.81		
13) I enjoy competing against an opponent.	CI5	0.77		
14) I try to avoid competing with others.	CI6	-0.78		
15) I get satisfaction from competing with others.	CI7	0.79		
16) I dread competing against other people.	CI8	-0.62		
17) I am a competitive individual.	CI9	0.61		
1) I enjoy working in situations involving competition with others.	WOFO-2	0.80		
21) I feel that winning is important in both work and games.	WOFO-3			0.46
22) I try harder when I’m in competition with other people.	WOFO-4		0.38	
23) It annoys me when other people perform better than I do.	WOFO-5			0.67

Notes: EC=Enjoyment of competition, PD=Personal development competitiveness, DW=Desire to win, CI=Competitiveness Index, WOFO-C = Work Family Orientation Subscale competitiveness. Factor loadings below 0.3 are omitted.

Both with respect to zero-order correlation (r) and partial correlation (p), that is, free of the corresponding other dimensions of competitiveness, the Competitive Index (CI) correlates most strongly with enjoyment of competition ($r_{CI,EC}=0.89$, $r_{CI,PD}=0.67$, $r_{CI,DW}=0.59$, $p_{CI,EC}=0.80$, $p_{CI,PD}=0.14$, $p_{CI,DW}=0.29$). Regarding the Competitiveness subscale from Helmreich and Spence (1978), we support earlier research reporting that this scale relates to all three dimensions. Due to the majority of items relating to Desire-to-win, however, the overall scale is most strongly related to Desire-to-win rather than to Enjoyment of Competition or Personal Development Competitiveness ($r_{WOFO-C,EC}=0.67$, $r_{WOFO-C,PD}=0.67$, $r_{WOFO-C,DW}=0.81$, $p_{WOFO-C,EC}=0.36$, $p_{WOFO-C,PD}=0.24$, $p_{WOFO-C,DW}=0.69$).

Appendix C: Summary statistics

Variable	Means	Standard deviation
<i>Competitiveness</i>		
Enjoyment of competition	4.35	1.53
Personal development competitiveness	5.09	1.42
Desire to win	4.57	1.44
<i>Personality</i>		
Honesty-Humility	4.86	1.00
Emotionality	4.42	1.02
Extraversion	4.64	1.11
Agreeableness	4.40	0.98
Conscientiousness	4.93	0.96
Openness to experience	5.08	0.97
<i>Gender</i>		
Female	0.54	0.50
<i>Confounding variables</i>		
General self-efficacy (GSE)	5.28	1.05
General risk-taking (GRT)	7.49	1.95

N=1,520.

Appendix D: Competitiveness and personality (facet-level analysis)

	M	SD	No control variables			Controlling for remaining personality facets and competitiveness dimensions		
			EC	PD	DW	EC	PD	DW
<i>Honesty-Humility (H)</i>								
Sincerity	5.00	1.37	-0.08(0.03)	-0.06(0.03)	-0.12(0.03) ^{ccc}	0.01(0.02)	-0.00(0.02)	-0.01(0.02)
Fairness	5.34	1.51	-0.11(0.03) ^{ccc}	-0.08(0.02) ^c	-0.14(0.02) ^{ccc}	-0.04(0.02)	-0.02(0.02)	0.01(0.02)
Greed avoidance	3.44	1.47	-0.15(0.03) ^{ccc}	-0.18(0.02) ^{ccc}	-0.33(0.02) ^{ccc}	0.04(0.02)	-0.03(0.02)	-0.15(0.02) ^{ccc}
Modesty	5.38	1.47	-0.20(0.03) ^{ccc}	-0.13(0.02) ^{ccc}	-0.37(0.02) ^{ccc}	-0.02(0.02)	0.06(0.02)	-0.21(0.02) ^{ccc}
<i>Emotionality (E)</i>								
Fearfulness	4.33	1.46	-0.16(0.03) ^{ccc}	-0.01(0.03)	-0.03(0.03)	-0.11(0.02) ^{ccc}	0.06(0.02)	0.01(0.02)
Anxiety	4.99	1.50	-0.12(0.03) ^{ccc}	0.02(0.02)	0.06(0.02)	-0.06(0.02)	0.02(0.02)	0.05(0.02)
Dependence	3.80	1.53	-0.11(0.03) ^{ccc}	-0.03(0.02)	-0.04(0.02)	-0.04(0.02)	0.01(0.02)	-0.02(0.02)
Sentimentality	4.55	1.39	-0.06(0.03)	0.01(0.03)	-0.05(0.03)	0.01(0.02)	0.01(0.02)	-0.00(0.02)
<i>Extraversion (X)</i>								
Social self-esteem	5.04	1.37	0.22(0.03) ^{ccc}	0.13(0.03) ^{ccc}	0.05(0.03)	0.09(0.03)	-0.01(0.03)	-0.02(0.03)
Social boldness	4.34	1.42	0.20(0.03) ^{ccc}	0.12(0.03) ^{ccc}	0.18(0.03) ^{ccc}	0.01(0.03)	-0.07(0.02)	0.11(0.02) ^{ccc}
Sociability	4.37	1.50	0.19(0.03) ^{ccc}	0.11(0.02) ^{ccc}	0.02(0.02)	0.10(0.02) ^{cc}	0.03(0.02)	-0.08(0.02) ^c
Liveliness	4.78	1.43	0.19(0.03) ^{ccc}	0.12(0.03) ^{ccc}	0.04(0.03)	0.00(0.03)	0.02(0.03)	-0.00(0.03)
<i>Agreeableness (A)</i>								
Forgivingness	4.60	1.59	-0.05(0.02)	-0.03(0.02)	-0.14(0.02) ^{ccc}	-0.03(0.02)	0.02(0.02)	-0.01(0.02)
Gentleness	4.17	1.29	-0.15(0.03) ^{ccc}	-0.07(0.03)	-0.22(0.03) ^{ccc}	-0.06(0.03)	0.04(0.02)	-0.02(0.02)
Flexibility	4.32	1.19	-0.15(0.03) ^{ccc}	-0.15(0.03) ^{ccc}	-0.30(0.03) ^{ccc}	-0.00(0.03)	-0.05(0.03)	-0.06(0.03)
Patience	4.68	1.60	0.07(0.02)	0.06(0.02)	-0.07(0.02) ^c	0.01(0.02)	0.06(0.02)	-0.03(0.02)
<i>Conscientiousness (C)</i>								
Organization	4.79	1.53	0.03(0.03)	0.07(0.02)	0.03(0.02)	-0.02(0.02)	0.03(0.02)	-0.01(0.02)
Diligence	4.99	1.25	0.08(0.03)	0.14(0.03) ^{ccc}	0.13(0.03) ^{ccc}	0.01(0.03)	0.01(0.02)	0.05(0.03)
Perfectionism	5.01	1.27	0.04(0.03)	0.13(0.03) ^{ccc}	0.18(0.03) ^{ccc}	-0.03(0.03)	0.02(0.03)	0.10(0.03) ^c
Prudence	4.90	1.21	-0.00(0.03)	0.03(0.03)	-0.03(0.03)	0.00(0.03)	0.01(0.03)	-0.02(0.03)
<i>Openness to experience (O)</i>								
Aesthetic appreciation	5.27	1.56	-0.05(0.03)	-0.02(0.02)	-0.04(0.02)	-0.01(0.02)	-0.02(0.02)	-0.01(0.02)
Inquisitiveness	5.11	1.39	0.02(0.03)	0.06(0.03)	0.01(0.03)	-0.04(0.02)	0.04(0.02)	0.01(0.02)
Creativity	4.96	1.44	0.04(0.03)	0.08(0.03) ^c	0.03(0.03)	0.00(0.02)	0.03(0.02)	0.01(0.02)
Unconventionality	5.07	1.17	0.03(0.03)	0.08(0.03)	-0.05(0.03)	0.02(0.03)	0.07(0.02)	-0.07(0.03)

Notes: N = 1,520. Ordinary least squares regression analyses, reporting standardized coefficients with standard errors in parentheses. Since all remaining 23 facets are controlled for at the facet-level, facet-level partial correlations reveal associations that are on top of associations of competitiveness with the common variance of broad personality factors. Abbreviations: M=Mean, SD=Standard deviation.

Significance levels corrected for multiple testing (row-specific degrees of freedom: 3x6x4 = 72): ^{ccc} p<0.001, ^{cc} p<0.01, ^c p<0.05

Appendix E: Multivariate association of dimensions of competitiveness with personality

To complement our analyses reported in the manuscript, we also estimate the extent to which each of the three competitiveness dimensions is conjointly explained by differences in multiple personality factors. We first estimate models that include only the six broad personality factors. As a next step, we add squared and cubic effects and all possible interactions of the six factors. Finally, we add the facet-level information for all personality factors. We test the increments in explanatory power via likelihood ratio tests.

For *enjoyment of competition*, the explained variance increases from 13 to 16 percent when including squared, cubic, and all possible interactive effects and to 22 percent when adding the facet-level information.

For *personal development competitiveness*, the explained variance increases from 7 to 12 percent and to 20 percent.

For *desire to win*, the explained variances increases from 18 to 28 percent and to 34 percent.

Overall, the six personality factors, their interactions, and their facets do not explain large parts of variance in each of the competitiveness dimensions, with enjoyment of competition and personal development competitiveness being least strongly associated with personality. Hence, while competitiveness dimensions display characteristic relationships with personality and, additionally, competitiveness is sometimes considered just reflecting a broader personality factor such as extraversion, competitiveness is not simply a reflection of a particular constellation of broad personality factors or their facets.