OSF Material 7: Full Models for all Analyses

In the present research, we needed to z-standardize the predictor variables because they were assessed on different measurement scales. We estimated the potential impact of the z-standardization by inspecting the full models for all analyses (see Tables 1 and 2 below). If it was the case that z-standardization masked effects or produced spurious effects, we would observe a full model which could theoretically, by applying a suitable linear transformation of the predictor scales, be transformed into a model that indicates effects which differ from our conclusion in the manuscript.

In seven out of ten analyses where the full model was significant, it reflected monotonous effects of self-viewed ability, real ability, or of SE, as (almost) 100% of the data points lay on one side of the respective surface (Analyses 5 to 11, see Table 2). For all of these analyses, effects are insensitive to shifting, stretching, or compressing the predictor scales, because such transformations would not change the rank order of the data points, and could thus not affect the form of the monotonous association with the outcome. For these analyses, z-standardization cannot have affected the respective conclusions, which can thus be considered robust against z-standardization or other transformations.

Consider now Analysis 2, for the content domain reasoning ability and the outcome category well-being. In this analysis, evidence pointed towards a beneficial PSV effect which might have an inflection point at a specific self-view value (indicated by the Curvilinear PSV Model), where this inflection point might depend on the level of real ability (indicated by the Full Model, see Table 2). When we described these results, we emphasized that the reversing shape of the effect must be interpreted very carefully, because only few data points were located at the declining side of the surface (11% of the data for the Curvilinear PSV Model, 22% for the Full Model).

If the declining shape of the surface was meaningful despite that only a little percentage of data supported it, this analysis might lead to a different conclusion when we transformed the predictor variables. The surface could, theoretically, take the form of a Self-Knowledge (Figure 3g in the manuscript) or an Optimal Margin surface (Figure 3h) if we transformed the predictors such that the ridge of the surface lies above the line of congruence (i.e., the line where S = R).

Similar observations hold for the analyses in the content domain reasoning ability and the outcomes global self-evaluation and self-rated agentic outcomes, while one must even be more careful here, as only 7% and 8% of data, respectively, lie on the declining side of the surface. Hence, for these three analyses (Analyses 1, 2, and 3), even if we applied that "miracle" transformation which maximally favors a Self-Knowledge or an Optimal Margin model, the evidence for that model would be rather weak given the sparsity of data points on the declining side.

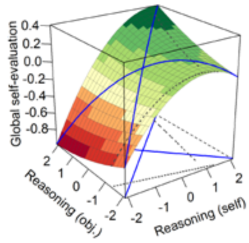
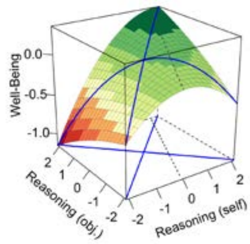
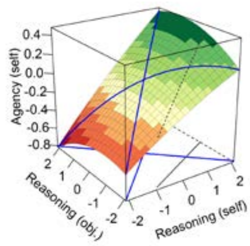
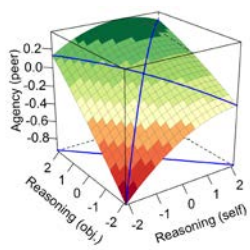
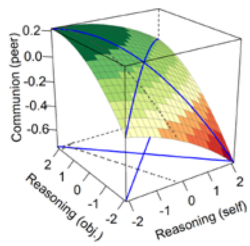
To sum up, the results of seven analyses are insensitive to linear scale transformations, meaning that the z-standardization has not masked effects, nor can it have produced spurious effects. For the three remaining analyses, results could have, in principle, shown slightly different effects when transforming the predictors, and it will be especially interesting to compare these results to similar investigations that apply commensurable predictor scales instead of z-standardization.

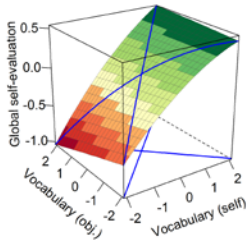
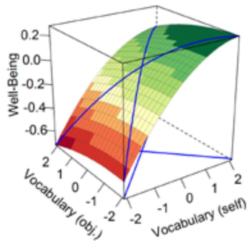
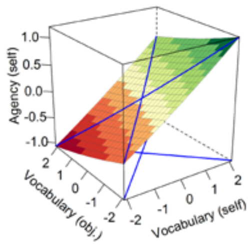
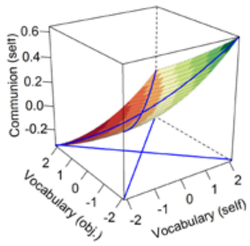
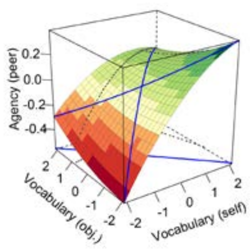
Table 1. *Regression Coefficients and RSA Parameters of the Full Models for All Analyses*

Analysis	b_1	b_2	b_3	b_4	b_5	a_1	a_2	a_3	a_4	p_{10}	p_{11}
Reasoning ability											
1 Global self-evaluation	0.239	0.013	-0.084	0.044	0.013	0.252	-0.027	0.226	-0.115	-6.15	4.602
2 Well-being	0.188	0.018	-0.088	0.08	-0.014	0.206	-0.022	0.169	-0.182	-1.95	2.295
3 Agency (self)	0.234	0.001	-0.011	0.031	-0.032	0.235	-0.012	0.233	-0.073	-1.56	0.537
4 Communion (self)	Full model not significant.										
5 Agency (peer)	0.099	0.196	-0.036	-0.029	-0.009	0.295	-0.074	-0.097	-0.016	5.01	-2.275
6 Communion (peer)	-0.087	0.144	-0.017	0.013	-0.031	0.056	-0.035	-0.231	-0.061	2.61	0.368
Vocabulary knowledge											
7 Global self-evaluation	0.319	-0.041	-0.036	0.027	-0.001	0.278	-0.011	0.359	-0.064	-11.99	2.934
8 Well-being	0.202	-0.037	-0.043	-0.002	-0.01	0.165	-0.055	0.24	-0.051	81.2	-35.08
9 Agency (self)	0.393	-0.145	0.01	0.004	0.008	0.249	0.022	0.538	0.014	28.5	0.574
10 Communion (self)	0.107	-0.127	0.027	-0.002	0.005	-0.019	0.03	0.234	0.034	13.16	-0.053
11 Agency (peer)	0.156	-0.004	-0.036	-0.033	0.013	0.152	-0.056	0.16	0.01	6.16	-3.296
12 Communion (peer)	Full model not significant.										

Note. Regression coefficients b_1 to b_5 refer to the polynomial model $Z = b_0 + b_1S + b_2R + b_3S^2 + b_4SR + b_5R^2$. The RSA parameters a_1 to p_{11} were computed from b_1 to b_5 and describe certain lines on the respective regression surface that can help to interpret it (see Edwards, 2007, for more details and respective formulas): The surface above the line with $S = R$ is given by $Z = a_1S + a_2S^2$. The surface above the line with $S = -R$ is given by $Z = a_3S + a_4S^2$. The ridge line (first principal axis) of the surface is located at $R = p_{10} + p_{11}S$.

Table 2. *Graphs of the Full Models for All Analyses*

Analysis		Graph of the full polynomial model	Percentage of data on prominent side of the surface[a)]
	Reasoning ability		
1	Global self-evaluation		**93**
2	Well-being		**78**
3	Self-rated agentic outcomes		**92**
4	Self-rated communal outcomes	Not significant	
5	Peer-rated agentic outcomes		98
6	Peer-rated communal outcomes		100

	Vocabulary knowledge			
7	Global self-evaluation		100	
8	Well-being		100	
9	Self-rated agentic outcomes		100	
10	Self-rated communal outcomes		100	
11	Peer-rated agentic outcomes		98	
12	Peer-rated communal outcomes	Not significant		

Note.
[a] Here, we considered that side of the surface "prominent", which contained the most data points, which was always the side that included the predictor combination (0,0). To compute the percentage of data on this side, we computed the position of the ridge line of the surface (i.e., the first principal axis) and counted the percentage of *(S,R)* combinations in the data that lay on each side of the ridge.

References

Edwards, J. R. (2007). Polynomial regression and response surface methodology. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on Organizational Fit* (pp. 361–372). San Francisco: Jossey-Bass.