Supplementary Tables

Supplementary Table 1

Means, standard deviations, and correlations of the variables used to develop peer relatedness scale

Items	Mean	SD	Min	Max	1	2	3	4
1. *How is your relationship with your classmates?*	4.34	0.80	1	5				
2. *My classmates think I have good ideas*	0.81	0.39	0	1	.26			
3. *I feel lonely in the class*	3.70	0.69	1	4	.32	.30		
4. *I have a good time with my classmates*	3.56	0.80	1	4	.36	.30	.44	
5. *I have a hard time in the classroom*	3.63	0.71	1	4	.31	.26	.47	.37

Note. All correlations are significant with p < .001

Supplementary Table 2

Factor loadings and Graded Response Model parameter estimates for peer relatedness scale

Items	λ	a	b_1	b_2	b_3	b_4
How is your relationship with your classmates?	0.61	1.30	-4.54	-3.8	-1.64	-0.07
My classmates think I have good ideas	0.59	1.25	-1.46			
I feel lonely in the class	0.84	2.65	-2.26	-1.78	-1.00	
I have a good time with my classmates	0.77	2.06	-2.37	-1.61	-0.74	
I have a hard time in the classroom	0.76	1.96	-2.52	-1.95	-0.85	

Note. λ = Factor loading; a = discrimination parameter; b_k = threshold parameters.

Supplementary Table 3

Instrumental variables validity and strength

Instrumental variables	Sargan test		Bassman test		Stock & Yogo test	
	χ^2	*p-value*	χ^2	*p-value*	F	*p-value*
for *Life satisfaction*						
Parental knowledge & Playing with family at home	0.010448	.918	0.010436	.918	39.248	$< .001$
for *School satisfaction*						
Attentional problems & Liking physical education	0.000031	.995	0.000031	.995	59.0563	$< .001$

Note. Sargan (1958) and Bassman (1960) are tests of overidentifying restrictions. The null hypothesis is that the instruments are uncorrelated with the error term of the predicted variable. Thus, failing to reject H0 supports the assumption of valid instruments. Stock & Yogo (2005) discuss a test of IVs' predictive strength whose null hypothesis is that the instruments are weak. As a rule of thumb, F values above 10 suggest strong IVs. From Stock & Yogo (2005) critical values, an F statistic greater than 19.93 is recommended to guarantee the IVs' strength. Altogether, current results suggest that IVs are valid and strong.

References

Basmann, R. L. (1960). On Finite Sample Distributions on Generalized Classical Linear Identifiability Test Statistics. *Journal of the American Statistical Association, 55*, 650–59.

Sargan, J. D. (1958). The estimation of economic relationships using instrumental variables. *Econometrica: Journal of the Econometric Society*, 393-415.

Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. In J, H. Stock & D. W. K. Andrews (Eds.), *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*. (pp. 80-108). Cambridge, UK: Cambridge University Press.

Supplementary Table 4

Parameter estimates with SEM methodology, including age as covariate

	β	SE	p
Life satisfaction on			
School satisfaction	.66	.11	<.001
Peer relatedness	.00	.04	.911
Age	-.01	.02	.658
Parental knowledge	.24	.05	<.001
Playing with family	.10	.03	<.001
Intercept	-.18	.23	.413
R^2	.18		
School satisfaction on			
Life satisfaction	.36	.12	<.001
Peer relatedness	.24	.03	<.001
Age	-.01	.02	.688
Attentional problems	-.08	.02	<.001
Liking physical education	.07	.01	<.001
Intercept	.08	.20	.699
R^2	.25		
var(e.Life satisfaction)	.88	.07	
var(e.School satisfaction)	.75	.03	
cov(e.Life, School sat.)	-.53	.12	

Note. $\chi^2_{\text{S-B}} = 0.01$; $p = .99$

Supplementary Table 5

Parameter estimates with SEM methodology, including gender as covariate

	β	SE	p
Life satisfaction on			
School satisfaction	.68	.11	<.001
Peer relatedness	.00	.04	.999
Gender (1 = girls)	-.13	.03	<.001
Parental knowledge	.25	.05	<.001
Playing with family	.10	.03	<.001
Intercept	-.23	.06	.413
R^2	.18		
School satisfaction on			
Life satisfaction	.35	.12	.003
Peer relatedness	.25	.03	<.001
Gender (1 = girls)	.09	.03	.001
Attentional problems	-.08	.02	<.001
Liking physical education	.07	.01	<.001
Intercept	-.05	.02	.008
R^2	.25		
var(e.Life satisfaction)	.88	.07	
var(e.School satisfaction)	.75	.03	
cov(e.Life, School sat.)	-.52	.12	

Note. $\chi^2_{\text{S-B}} = 0.55$; $p = .76$

Supplementary Table 6

Parameter estimates with SEM methodology, including school grade as covariate

	β	SE	p
Life satisfaction on			
School satisfaction	.67	.11	<.001
Peer relatedness	.00	.04	.932
School grade	.00	.01	.774
Parental knowledge	.23	.05	<.001
Playing with family	.10	.03	<.001
Intercept	-.30	.10	.002
R^2	.18		
School satisfaction on			
Life satisfaction	.37	.12	.002
Peer relatedness	.24	.03	<.001
School grade	.00	.01	.845
Attentional problems	-.08	.02	<.001
Liking physical education	.07	.01	<.001
Intercept	-.02	.07	.819
R^2	.25		
var(e.Life satisfaction)	.88	.07	
var(e.School satisfaction)	.75	.03	
cov(e.Life, School sat.)	-.52	.12	

Note. $\chi^2_{\text{S-B}} = 0.01$; $p = .99$

Supplementary Table 7

Parameter estimates with SEM methodology, including school type as covariate

	β	SE	p
Life satisfaction on			
School satisfaction	.64	.11	<.001
Peer relatedness	.01	.04	.725
School type (1 = public)	-.01	.03	.762
Parental knowledge	.25	.05	<.001
Playing with family	.11	.03	<.001
Intercept	-.29	.06	<.001
R^2	.18		
School satisfaction on			
Life satisfaction	.33	.12	.006
Peer relatedness	.25	.03	<.001
School type (1 = public)	.01	.02	.547
Attentional problems	-.09	.02	<.001
Liking physical education	.07	.01	<.001
Intercept	-.01	.02	.552
R^2	.25		
var(e.Life satisfaction)	.88	.07	
var(e.School satisfaction)	.75	.03	
cov(e.Life, School sat.)	-.52	.12	

Note. $\chi^2_{\text{S-B}} = 0.01$; $p = .99$