Appendix B

Reliability Analyses

We estimated the GLB using the *psych* package in R (Revelle, 2022). For Raykov's omega, we conducted CFA. We used a Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator for the scales measuring socio-emotional experiences of school due to the three-point response scales. We used a robust maximum likelihood (MLR) estimator for the CFA of the teacher judgment of cognitive ability scale which had a six-point response scale. We identified models using standardized latent variables. To evaluate model fit, we used the cutoffs of Hu and Bentler (1999) of $CFI \geq .95$ and $SRMR \leq .08$. For the *RMSEA*, we referred to the specifications of Browne and Cudek (1992) who evaluate $RMSEA \leq .05$ as good model fit, $RMSEA \leq .08$ as acceptable model fit, and $RMSEA \geq .10$ as misspecification.

All scales measuring socio-emotional experiences of school contain three items. A congeneric CFA with three indicators is just identified; therefore, we could not assess the model fit. We could only evaluate the fit of the models assuming essential tau-equivalence (i.e., equal factor loadings). Essential tau equivalence held for all scales except class climate (Table B.1). For this scale, we estimated Raykov's omega based on the congeneric factor model. For the other scales, we estimated Raykov's omega based on the essential tau-equivalence factor model.

We tested the model fit of the congeneric model of the six-item scale teacher judgement of cognitive ability and allowed three residual covariances to ensure an acceptable model fit (see Table B.2 Note). We estimated Raykov's omega based on the congeneric model including the three residual covariances. Table B.2 shows all CFA results.

References

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*, 230–258. https://doi.org/10.1177/0049124192021002005

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1–55. https://doi.org/10.1080/10705519909540118

Revelle, W. (2022). *Procedures for psychological, psychometric, and personality research [R package psych version 2.2.9]*. Comprehensive R Archive Network (CRAN). https://cran.r-project.org/web/packages/psych/index.html

Table B.1

Fit Indices, Standardized Factor Loadings, and Standardized Uniqueness of CFA for Scales Measuring Socio-Emotional Experiences of School Assuming Essential Tau-Equivalence

Scale	χ^2	*df*	*p*	*CFI*	*RMSEA*	*SRMR*	Loading item 1 (Uniqueness)	Loading item 2 (Uniqueness)	Loading item 3 (Uniqueness)
Willingness to make effort	0.122	2	.941	1.00	.000	.007	.58 (.66)	.58 (.67)	.58 (.67)
Class climate	22.858	2	< .001	.941	.085	.059	.56 (.69)	.56 (.69)	.56 (.68)
Academic self-concept	4.528	2	.104	.997	.035	.026	.69 (.52)	.69 (.52)	.69 (.52)
Joy of learning	12.784	2	.002	.981	.065	.053	.73 (.46)	.73 (.46)	.73 (.47)
Attitude towards school	2.835	2	.242	.999	.029	.022	.84 (.29)	.85 (.28)	.84 (.29)
Social integration	15.799	2	< .001	.960	.071	.058	.62 (.62)	.62 (.61)	.62 (.62)
Feeling of being accepted	3.005	2	.223	.993	.027	.030	.66 (.56)	.66 (.57)	.66 (.57)

Table B.2

Fit Indices, Standardized Factor Loadings, and Standardized Uniqueness of CFA for the Scale Teacher Judgment of Cognitive Ability

Model	χ^2	*df*	*p*	*CFI*	*RMSEA*	*SRMR*	Loading item 1 (Uniqueness)	Loading item 2 (Uniqueness)	Loading item 3 (Uniqueness)	Loading item 4 (Uniqueness)	Loading item 5 (Uniqueness)	Loading item 6 (Uniqueness)
Congeneric	609.976	9	< .001	.943	.210	.038	.93 (.14)	.93 (.13)	.95 (.11)	.73 (.47)	.89 (.21)	.85 (.28)
Congeneric with 3 residual covariances	69.169	6	< .001	.994	.081	.015	.91 (.17)	.91 (.17)	.96 (.08)	.72 (.48)	.89 (.21)	.84 (.29)
Essential tau-equivalent with 3 residual covariances	211.987	11	< .001	.981	.109	.118	.91 (.17)	.91 (.17)	.95 (.11)	.79 (.38)	.90 (.20)	.86 (.26)

Note. Residual covariances were added between the items 1 (“understands new learning content quickly”) and 2 (“can remember most things the first time”), 4 ("can express him/herself in a linguistically differentiated way”) and 6 (“knows a lot”), as well as 5 (“transfers newly acquired knowledge to other suitable areas”) and 6 (“knows a lot”).

Appendix C

Table C.1

Quality Parameters for the Linear Discriminant Analyses without the Variables Willingness to Make an Effort and Class Climate

	γ	c	Λ	X^2 (df)	p	% correct classification
Sample 1						
function 1	.154	.365	.858	49.811 (10)	< .001	45.6
function 2	.009	.097	.991	3.073 (4)	.546	
Sample 2						
function 1	.065	.247	.926	22.356 (10)	.013	41.6
function 2	.014	.117	.986	4.021 (4)	.403	

Note. γ = Eigenvalue, which indicates the ratio of explained to unexplained variance; c = canonical correlation, which indicates how much variance can be explained by the discriminant function; Λ = Wilks-Lambda, which describes the ratio of unexplained to total variance.

Table C.2

Structure Matrix of Discriminant Function 1 without the Variables Willingness to Make an Effort and Class Climate

	Structure matrix	
	Sample 1	Sample 2
Academic self-concept	.967	.794
Joy of learning	.408	.294
Attitude towards school	.186	.006
Social integration	.073	.035
Feeling of being accepted	.278	.456