

A longitudinal analysis of reciprocal relations between students' well-being and academic achievement

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Overview

Besides acquisition of academic competencies, well-being is an important educational goal (e. g., Van Petegem et al., 2006) and it has been shown that both outcomes are mutually dependent. However, until now, most studies used cross-sectional designs so that the direction of the relation is not yet fully understood.

Students' well-being

- Students' well-being can be approached by the theory of subjective well-being (SWB; Diener, 1984) → Basis: Hedonic view
- Components of students' well-being (see Figure 1; e.g., Hascher, 2004; WHO, 2014): Physical (e.g., days of absent), psychological with cognitive and an emotional component (e.g., satisfaction with school), and social (e.g., relationships with peers)

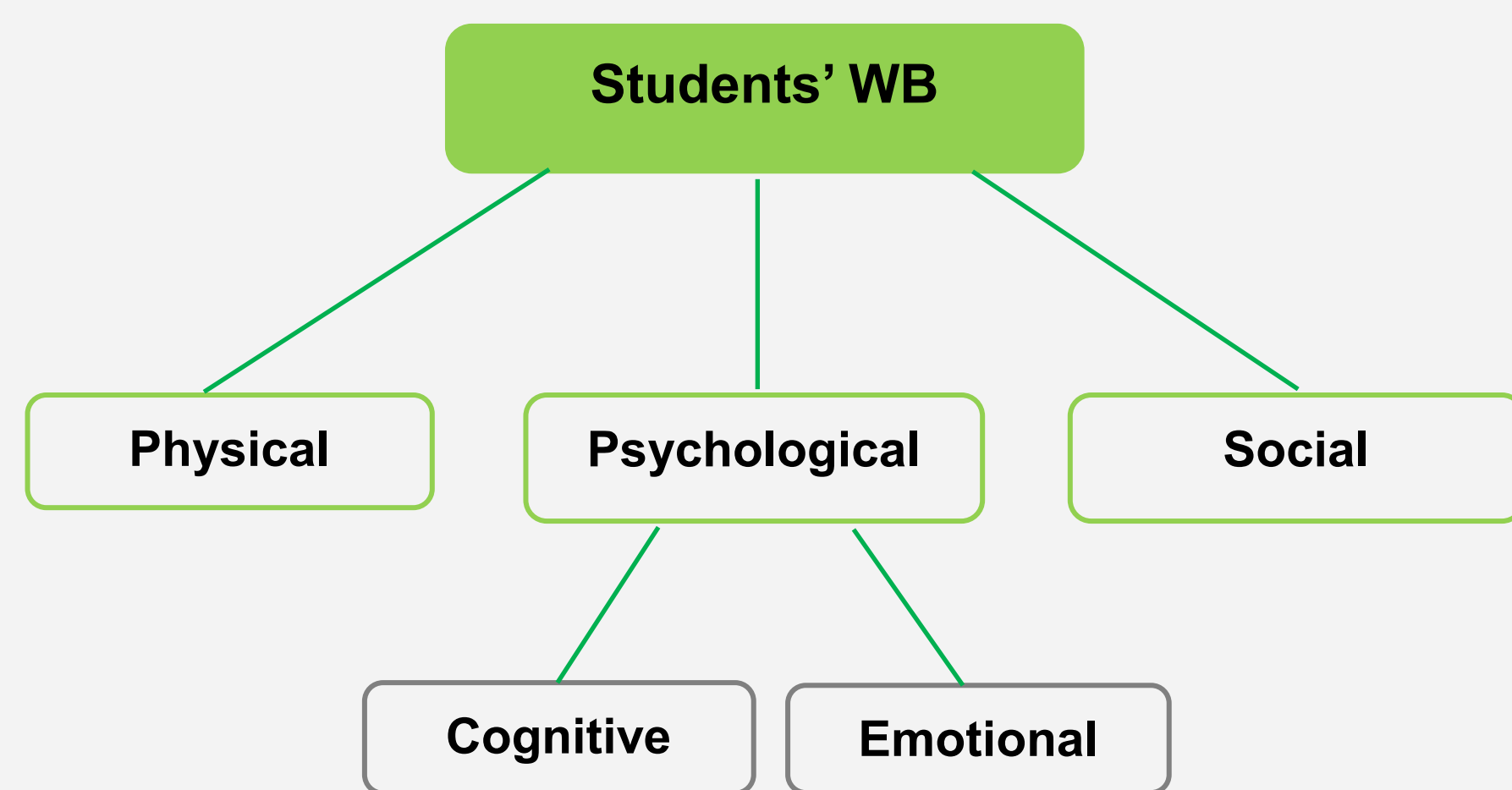


Figure 1. Components of students' well-being.

Students' well-being and academic achievement

- Positive correlation between students' well-being and academic achievement ($r = .16$; see meta-analysis by Bückner et al., 2018)
- Only few studies analyzed the relation between students' well-being and academic achievement longitudinally (e.g., Steinmayr et al., 2016).
- Theoretically, the direction can be postulated from academic achievement to well-being as well as vice versa (see e.g., broaden-and-build-theory, Fredrickson, 2001; self-determination-theory, Ryan, & Deci, 2000).

Gender, type of school, students' SWB and achievement

- Girls compared to boys are more satisfied with school, perceive more physical issues and stress (e.g., Hascher & Hagenauer, 2011; Schurt & Waburg, 2007).
- Girls tend to have better grades than boys (e.g., Berger et al., 2011) → gender-specific differences regarding the relation between SWB and academic achievement possible
- Different types of school represent diverse learning environments (e.g., Baumert et al., 2009) → relation between achievement motivation and well-being depends on school characteristics (Opdenakker & van Damme, 2000).

Research questions

- Do reciprocal relations exist between academic achievement and a) physical well-being, b) cognitive well-being, and c) emotional well-being?
- Do the reciprocal patterns differ between a) gender and b) type of school?

Method

Sample

- Students who participated in the Nationale Educational Panel Study (3rd starting cohort)
- Focus on traditional academic tracks of the German secondary school system

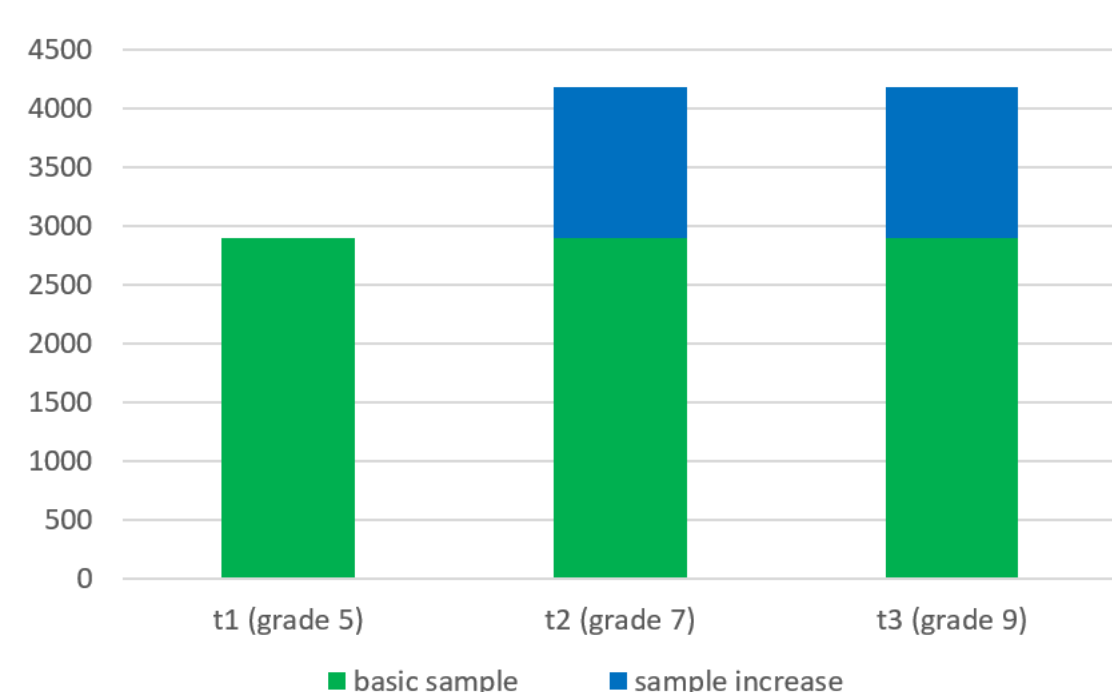


Figure 2. Sample size on different points of measurement.

Table 1: Sample characteristics of the two groups viewed in longitudinal section

	N	M _{age}	SD _{age}	% female
Group 1	2902	10.75 ^a	0.48 ^a	49.7
Group 2	4180	12.77 ^b	0.50 ^b	49.5

Note. ^a measured on t₁, ^b measured on t₂

Instruments

Table 2: Means, standard deviations and skewness for the variables used in the analyses of the study.

Instrument	Range	Number of items	Mean (SD)			Reliability		
			t ₁	t ₂	t ₃	t ₁	t ₂	t ₃
MC		25	0.24 (1.14)	0.89 (1.22)	0.15 (1.20)	.78	.72	.81
RC		25	0.24 (1.23)	0.84 (1.37)	0.10 (1.13)	.77	.79	.79
DA	0-99	1	-	1.44 (4.09)	1.36 (2.52)	-	-	-
SH	1-5	1	-	4.25 (0.78)	4.14 (0.80)	-	-	-
SL	0-11	5	8.89 (1.51)	8.39 (1.43)	8.13 (1.66)	.83	.78	.86
SS	0-11	1	8.06 (2.25)	7.10 (2.31)	6.94 (2.26)	-	-	-
HG	1-4	3	-	1.77 (0.69)	1.80 (0.69)	-	.82	.82
HM	1-4	3	-	1.68 (0.71)	1.74 (0.75)	-	.85	.87

Note. DA = Days of absence from school, SH = Self-estimated health, SL = Satisfaction with life, SS = Satisfaction with school, HG = Helplessness German, HM = Helplessness Math, MC = Mathematical competence, RC = Reading competence. Values for MC and RC are WLEs.

Results

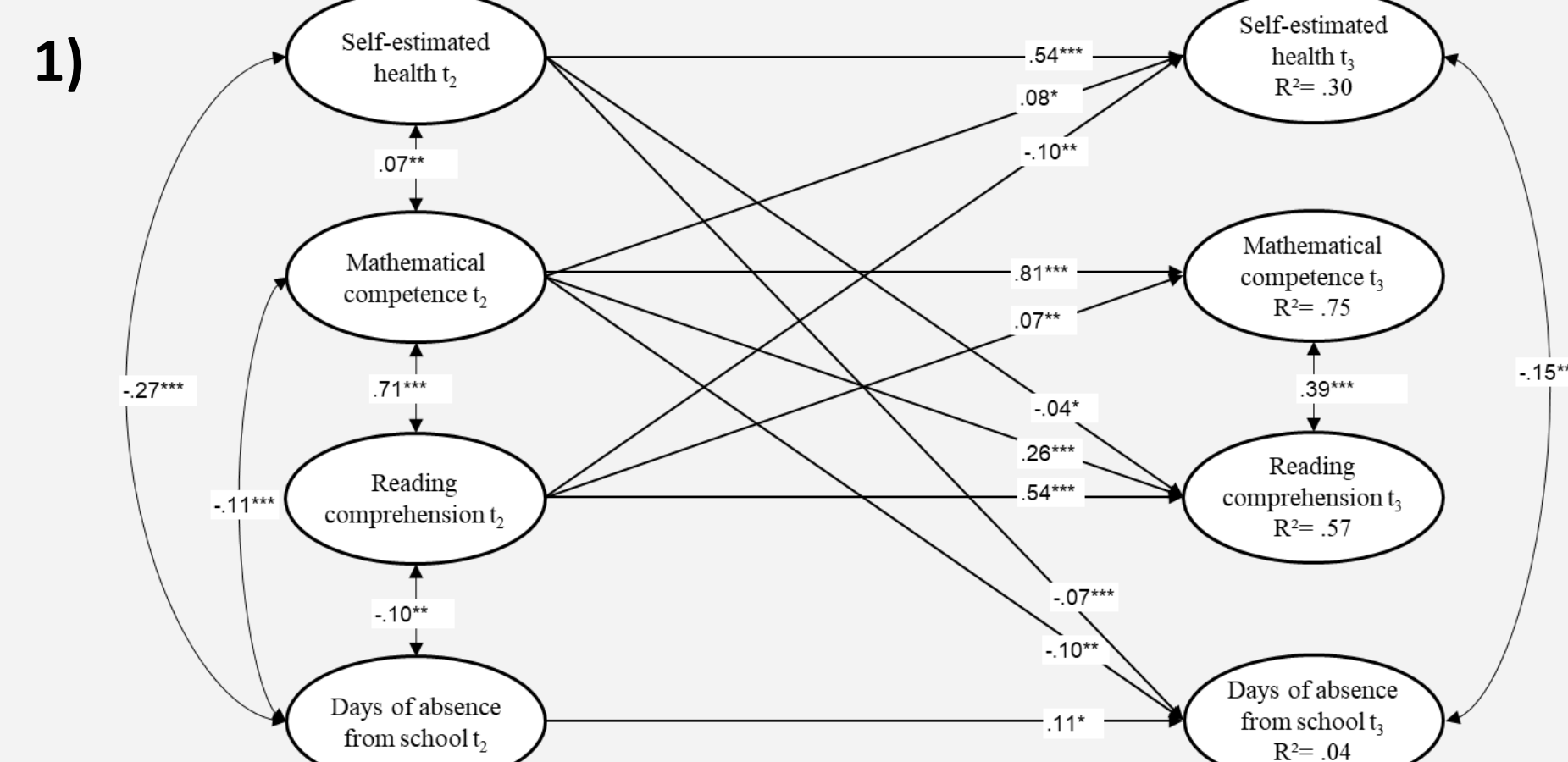


Figure 3. Reciprocal relations between physical well-being and academic achievement.

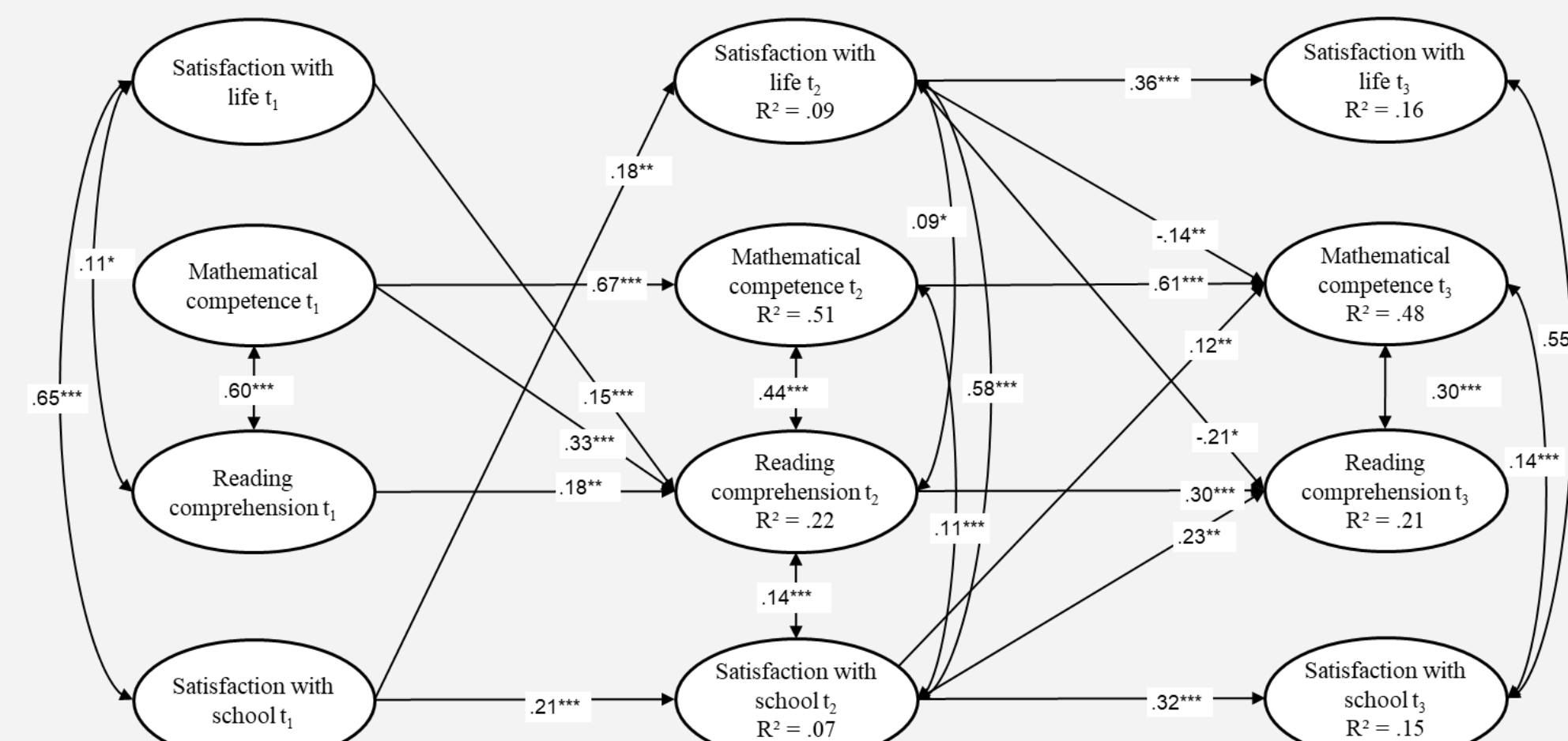


Figure 4. Reciprocal relations between cognitive well-being and academic achievement.

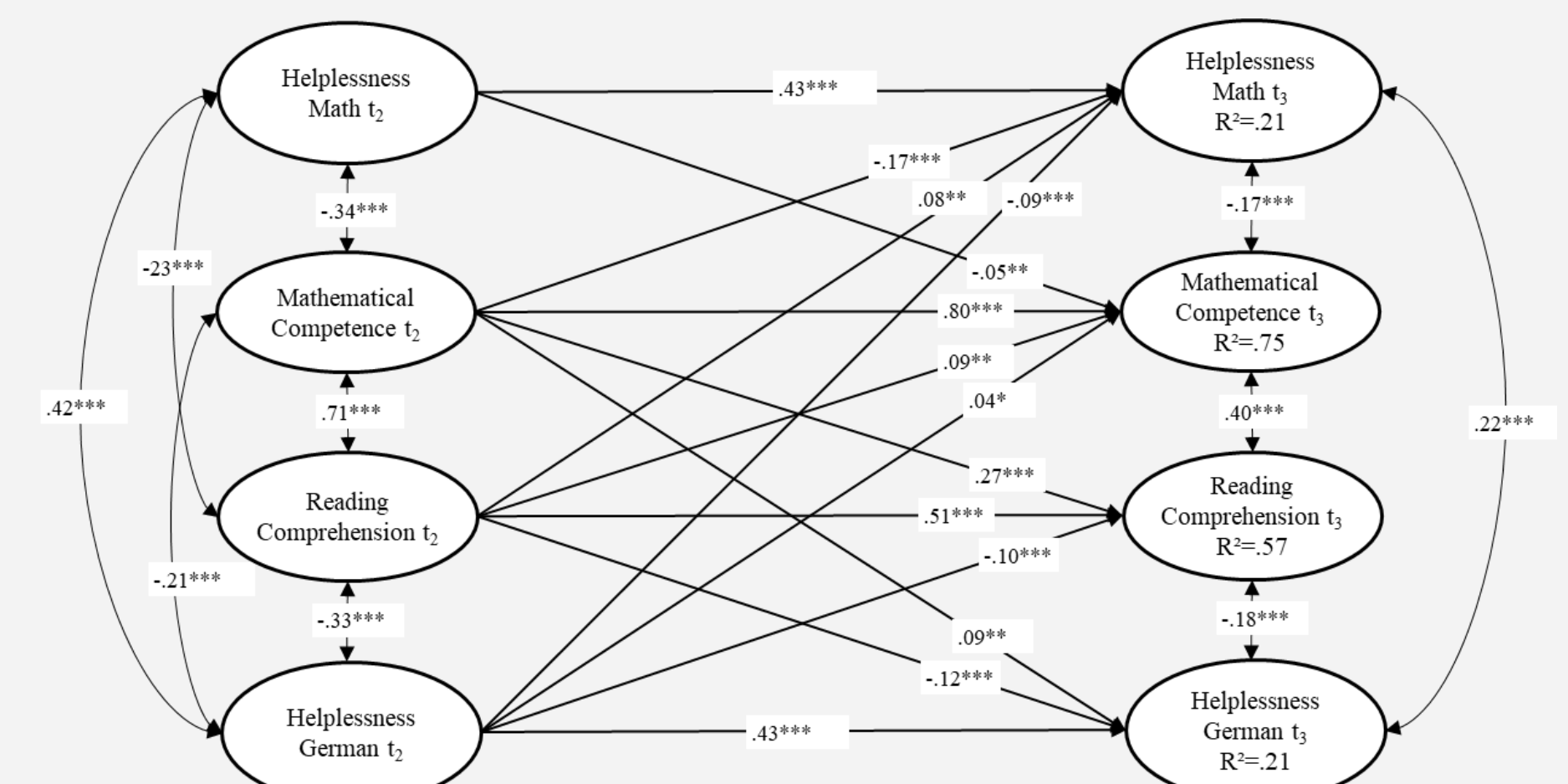


Figure 5. Reciprocal relations between emotional well-being and academic achievement.

- Relations were not different for gender and type of school. Model comparisons did not reveal substantial differences in model fit if regression parameters were restricted to being equal between sexes and types of school, respectively (Δ CFI-values ranged from -.006 to -.000).

Conclusion

- Mainly positive relations between students' well-being and academic achievement (e.g., Bückner et al., 2018) → Importance of mathematical competence for students' well-being
- Neither support only for the SDT (Ryan, & Deci, 2001) nor the broaden-and-build theory (Fredrickson, 2001).

Discussion and Outlook

- Limitations:** Partly single item measurement, no consideration of German federal states
- Strengths:** Longitudinal analysis, large sample size, consideration of multiple facets of students' well-being
- Further research:** Inclusion of variables like self-concept or divergent thinking as mediators, focus on other school types

Selected References

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