

Searching for the effect of multiple uncontrolled interventions in BRMS

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Searching for the effect of multiple uncontrolled interventions in BRMS

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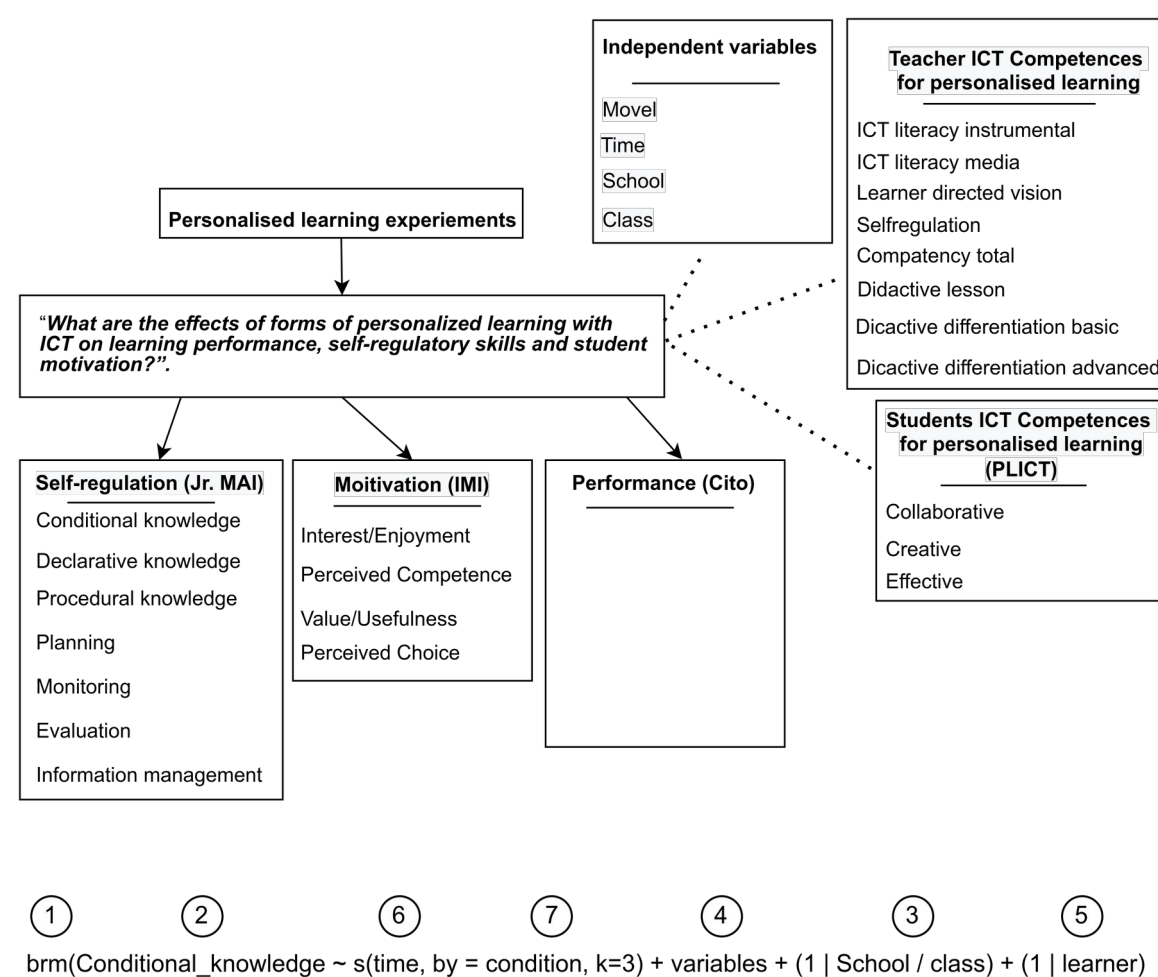
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Abstract

We search for the effects of 8 different (uncontrolled) interventions (1 intervention per school) on the sub-concepts of learner's (4th to 8th grade) motivation, self-regulation, and ICT competency data over the past three years. Data marking for intervention (yes/no), ICT competence of teachers and the presence of specially trained teachers are added to the formulas. Assessment of ICT competency in 3rd grade can be used as prior. Smooths illustrate if the (motivation or self-regulation) concept grows over time grouped by intervention, school or grade. Grades are nested within schools and data is grouped by student. Are we missing anything?

Variables and model



CFA and R2

Confirmatory Factor Analysis for IMI and Jr.MAI for primary education and translated to Dutch.

Indicator	Estimate	Std. Error	z-value	p	Lower	Upper
Interest/Enjoyment	0.514	0.075	0.6867	< .001	0.367	0.661
Perceived Competence	0.357	0.065	0.5456	< .001	0.229	0.485
Value/Usefulness	0.333	0.074	0.4510	< .001	0.188	0.477
Perceived Choice	0.136	0.038	0.3578	< .001	0.061	0.210
Declarative Knowledge	0.459	0.047	0.9759	< .001	0.367	0.551
Conditional Knowledge	0.427	0.049	0.8749	< .001	0.332	0.523
Procedural Knowledge	0.594	0.065	0.9112	< .001	0.466	0.722
Planning	0.436	0.053	0.8159	< .001	0.331	0.541
Monitoring	0.344	0.050	0.6914	< .001	0.247	0.442
Information Management	0.297	0.069	0.4294	< .001	0.162	0.433
Evaluation	0.578	0.061	0.9445	< .001	0.458	0.698

Bayes r2

Indicator	bayes_r2
Interest/Enjoyment	0.687
Perceived Competence	0.609
Value/Usefulness	0.464
Perceived Choice	0.343
Declarative Knowledge	0.34
Conditional Knowledge	0.297
Procedural Knowledge	0.22
Planning	0.301
Monitoring	0.36
Information Management	0.301
Evaluation	0.353

Results

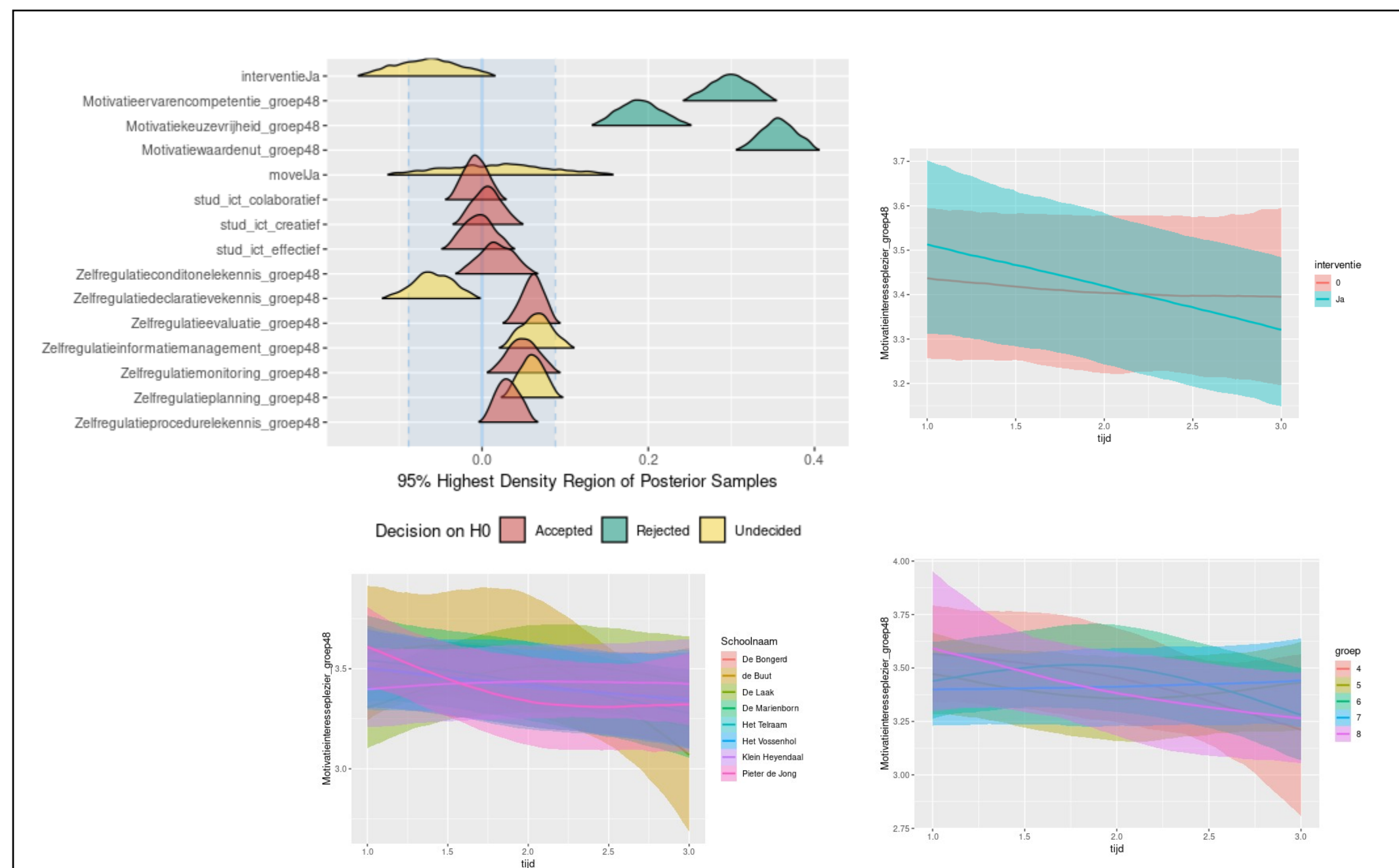
Hypothesis 1: The experimental condition has a practically significant effect on the concepts of self-regulation or motivation.

The experimental condition has a high probability of **directional effect** (>90%) for three concepts; Value/Usefulness (96%), Perceived Competence (93%), and Monitoring (94%). **The existence of this directional effect is not significant when tested using Bayes Factor for Value/Usefulness (.091), Perceived Competence (.058), or Monitoring (.107).**

Tests for Practical Equivalence displayed in table 3 display the results for this hypothesis (on the 1st horizontal row) "Experimental". The distribution of the effect of the experimental condition overlaps with the rope of all self-regulatory and motivational concepts. This means there is no practically significant effect of the experimental condition on self-regulation or motivational concepts. The most positive results show partial overlap of the HDI with the ROPE for Value/Usefulness (44%), Perceived Competence (52%), and Monitoring (33%).

Which other variables have a practically significant effect on the development of Interest/Enjoyment (H1h).

Interest/Enjoyment has an absolute probability of **directional effect** (100%) from four concepts; Planning, Evaluation, Perceived Competence Value/Usefulness and Perceived Choice. **These concepts are significant when tested using Bayes Factor. Moderate evidence is found for Planning (5.3), Evaluation (7.6). Extreme evidence is found for Perceived Competence (>1000), Value/Usefulness, (>1000) and Perceived Choice (>1000).** Table 3 displays the results for this hypothesis (on 1st vertical row) "Interest/Enjoyment". Table 3 shows the concepts Perceived Competence, Value Usefulness and Perceived Choice have a positive practically significant positive effect on the development of "Interest/Enjoyment".



		Motivation		self-regulation								
		Interest Enjoyment	Perceived Competence	Value Usefulness	Perceived Choice	Declarative Knowledge	Conditional Knowledge	Procedural Knowledge	Planning	Monitoring	Information Management	Evaluation
rope range		'-0.09 / 0.09	'-0.08 / 0.08	'-0.08 / 0.08	'-0.06 / 0.06	'-0.08 / 0.08	'-0.08 / 0.08	'-0.11 / 0.11	'-0.11 / 0.11	'-0.09 / 0.09	'-0.09 / 0.09	'-0.13 / 0.13
		% of 89% HDI Inside ROPE										
Experimental	99%	52%	44%	88%	87%	87%	80%	75%	33%	55%	87%	
Interest Enjoyment		0%	0%	0%	54%	100%	97%	4%	59%	22%	0%	
Perceived Competence	0%		68%	100%	0%	22%	97%	100%	94%	100%	100%	
Value Usefulness	0%	33%		95%	37%	71%	100%	100%	55%	100%	100%	
Perceived Choice	0%	100%	92%		55%	100%	94%	97%	100%	100%	100%	
Declarative Knowledge	96%	0%	19%	46%		0%	0%	12%	100%	50%	29%	
Conditional Knowledge	100%	68%	78%	100%	0%		33%	84%	94%	100%	5%	
Procedural Knowledge	100%	100%	100%	100%	59%	79%		100%	100%	93%	100%	
Planning	100%	100%	100%	100%	92%	100%	100%		74%	30%	34%	
Monitoring	100%	100%	100%	100%	100%	97%	73%	28%		2.5%	0%	
Information Management	97%	100%	100%	100%	88%	100%	55%	4%	4%		83%	
Evaluation	100%	100%	100%	100%	100%	69%	100%	44%	0%	100%		
ICT literacy instrumental	55%	43%	54%	6.4%	50%	0%	35%	18%	11%	8%	52%	
ICT literacy media	90%	82%	94%	29%	74%	0%	46%	53%	62%	21%	91%	
Learner directed	50%	51%	4%	58%	56%	19%	25%	50%	39%	0%	56%	
self-regulation competency	83%	62%	70%	40%	70%	63%	53%	74%	18%	50%	77%	
didactic lesson	44%	22%	49%	5%	33%	43%	16%	32%	39%	33%	42%	
didactic dif. Basic	90%	55%	75%	45%	72%	80%	44%	42%	35%	71%	31%	
didactic. Advanced	67%	65%	24%	50%	47%	62%	38%	57%	54%	26%	26%	
Collaborative	100%	100%	100%	89%	100%	100%	100%	100%	100%	100%	100%	
Creative	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Effective	100%	100%	100%	100%	68%	100%	100%	100%	100%	100%	56%	
Moveel	48%	37%	10%	31%	69%	54%	48%	54%	67%	64%	73%	