Conquering Stock Flow Failure: effects of a 20 minutes intervention measured immediately afterwards and long-term

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Supporting Materials

Table A.1: Experimental procedure depending on the intervention group for t0. The sequence of events should be read from top to bottom. Text written in italics apply to all groups

|	CG	EG 1	EG 2
	General information, form of agreement, participant Code, demographics 1		
Open question	Favorit animal		Analytical thinking
	One page intro to basic concept of simple dynamic systems		
		Worked example with explanations of the most important stock flow principles	
			Raise motivation
1 drawing & 1 QB-task	Flow chart	Flow chart	Flow chart
			GPS activation
		Hints how to approach the task	Hints how to approach the task
		Describe stock	Describe stock
	Draw stock/ answer Q	*Draw stock/ answer Q*	*Draw stock/ answer Q*
	4 more stock flow tasks (3x drawing, 1x QB)		
	Order of difficulty, opportunity to change solution, demographics 2, contact information for lottery and follow-up		
	Feedback including explanations		
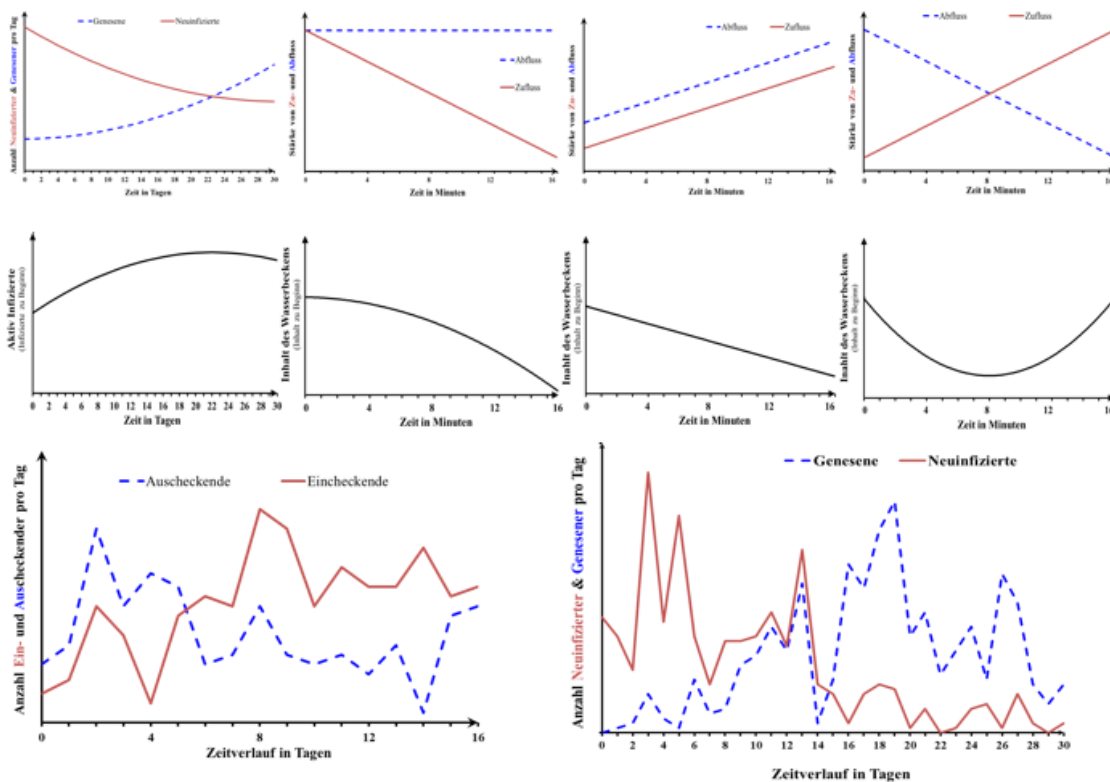
Figure A.1: The stock flow tasks used at t_1 Top row shows the four flow charts (Corona, K_down, P_up, X) from the drawing tasks, below the corresponding stock developments. Bottom row shows question-based tasks QB3 and QB_Corona. Questions were the same as usual.
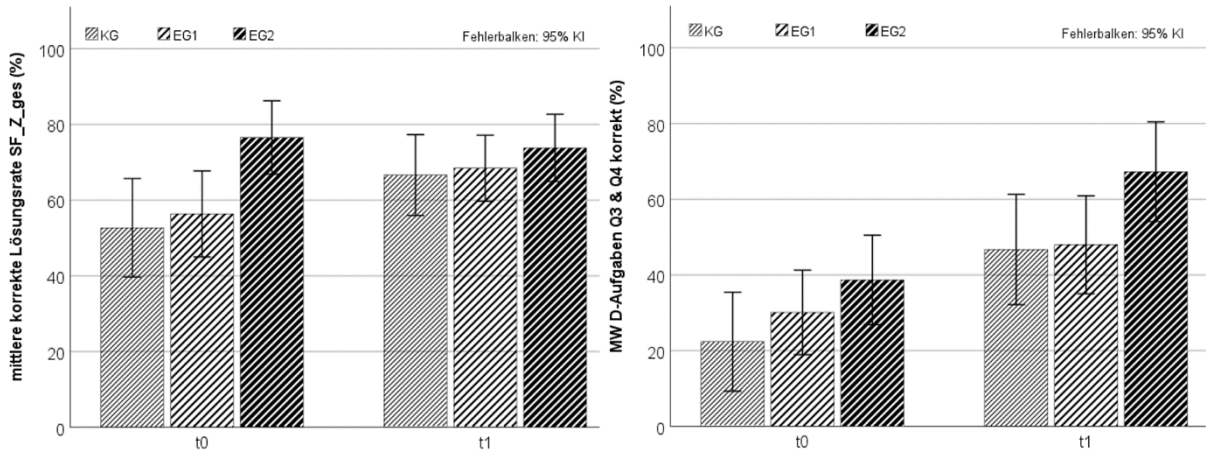
Figure 1: Average solution rates for the drawing tasks (left) and the question-based tasks (right), separated by intervention groups for t_0 and the first follow-up t_1 after one to two months. N=129 for both times.
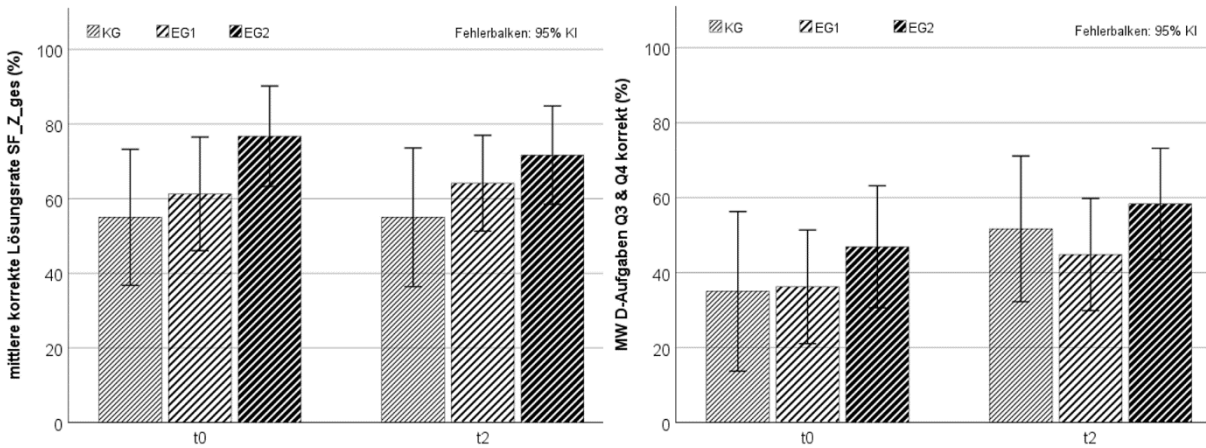

Figure 2: Average solution rates for the drawing tasks (left) and the question-based tasks (right), separated by intervention groups for t_0 and the second follow-up t_2 after 2.5 years. N=73 for both times.

Table A.2: Multiple linear regression models to predict the average solution rate for stock flow tasks during the follow up tests. R^2 provided is always the adjusted R^2.

predictor	Drawing tasks				QB-tasks			
	t_1[b] $R^2 = 0.271$		t_2[c] $R^2 = 0.268$		t_1[b] $R^2 = 0.294$		t_2[c] $R^2 = 0.206$	
	β	p	β	p	β	p	β	p
Constant		.757		.056		.020		.225
Dummy (EG1)	-.034	.712	.082	.526	-.013	.890	-.136	.311
Dummy (EG2)	.071	.450	.210	.110	.203	.029	.093	.495
Sex	.233	.005	.224	.046	.317	.000	.326	.006
Math grade	.336	<.001	.212	.070	.193	.034	.164	.175
STEM	.153	.079	.033	.778	.139	.106	.089	.470
NFC	-.119	.212	.063	.629	-.107	.251	-.025	.852
Motivation[a]	.070	.394	.219	.048	.160	.049	.122	.285
Interest in math	.195	.068	.221	.129	.213	.043	.201	.183

[a] Motivation was measured each time at the end of the test.
[b] t_1 was one to two months after t_0, n=129
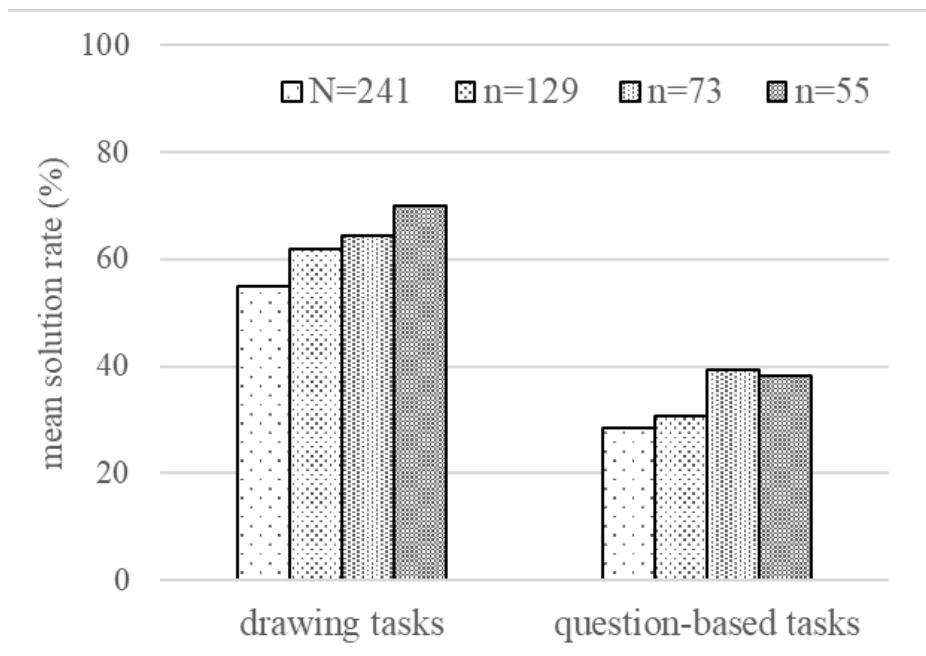[c] t_2 was around 2.5 years after t_0, n=73

Figure A.4: Increasing solution rates with decreasing sample size, using data collected at t_0.