

Table 1: Response frequency of APT.

	A	B	C	D	E	Correct	α_{drop}	α_{raw}	M	SD	M_t	SD_t
APT01.c	30	2	1	4	104	E	0.5	0.64	0.74	0.44	16.26	8.08
APT02.c	4	83	2	21	30	B	0.25	0.67	0.59	0.49	18.87	9.83
APT03.c	8	28	4	82	19	D	0.4	0.65	0.58	0.5	20.7	10.66
APT04.c	69	6	15	6	43	A	0.19	0.68	0.5	0.5	26.96	14.79
APT05.c	39	9	78	8	5	C	0.31	0.67	0.56	0.5	19.34	9.13
APT06.c	3	63	10	32	26	B	0.46	0.65	0.47	0.5	36.35	24.49
APT07.c	89	6	32	4	5	A	0.25	0.67	0.65	0.48	20.73	12.63
APT08.c	52	20	15	12	37	A	0.23	0.68	0.38	0.49	26.46	13.46
APT09.c	70	18	29	9	8	A	0.42	0.65	0.52	0.5	28.29	14.98
APT10.c	15	47	28	16	18	B	0.17	0.68	0.38	0.49	29.18	15.73
APT11.c	2	3	15	75	21	D	0.08	0.7	0.65	0.48	23.18	43.6
APT12.c	4	1	9	92	5	D	0.2	0.68	0.83	0.38	15.47	7.64
APT13.c	7	6	16	11	59	C	0.03	0.69	0.16	0.37	16.78	13.46
APT14.c	3	10	69	2	7	C	0.52	0.64	0.76	0.43	14.87	8.34
APT15.c	2	50	16	2	4	B	0.35	0.66	0.68	0.47	19.1	9.4
All							0.29	0.67	0.56	0.47	22.17	14.41

The correlation of mean correct answers and average required time for answering for the APT is -0.44 . The correlation of mean correct answers and average required time for answering for the MCP is -0.21 .

Table 2: Response frequency for MCP.

	a	b	c	d	Correct	α_{drop}	α_{raw}	M	SD	M_t	SD_t
phy.mc.loop1.c	38	7	59	7	c	0.25	0.51	0.53	0.5	65.32	63.79
phy.mc.knet1.c	6	53	26	6	b	0.31	0.49	0.58	0.5	36.26	23.25
phy.mc.elko1.c	48	7	1	11	a	0.35	0.48	0.74	0.44	34.52	28.86
phy.mc.uroh1.c	17	7	17	35	d	0.11	0.56	0.47	0.5	49.66	72.95
phy.mc.knet2.c	6	9	36	7	c	0.07	0.57	0.64	0.48	44.05	67.83
phy.mc.uroh2.c	6	12	56	6	c	0.37	0.47	0.7	0.46	28.82	29.32
phy.mc.loop2.c	6	56	22	10	b	0.21	0.52	0.6	0.49	44.06	51.5
phy.mc.elko2.c	29	10	41	51	d	0.4	0.45	0.4	0.49	28.08	25.97
All						0.26	0.51	0.58	0.48	41.35	45.43

Table 3: Correlations of APT and MCP.

	MCP			APT		
	Time1	Time2	Time3	Time1	Time2	Time3
Political engagement	0.07			0.02		
Social support in physics	0.02			0.03		
Physics identity	0.12			0.02		
Self-efficacy physics	0.12			0.01		
Expectancy physics competition	0.13	0.05		0.11	0.07	
Expectancy physics study/vocation	0.08	0.08	0	0.15	0.09	0.27*
Value physics competition	-0.04	-0.04		-0.02	-0.02	
Value physics study/vocation	0.1	0.1		-0.02	-0.02	
Vocational motivation physics	0.25	0.16	0.25	0.11	0	0.11
Subject interest physics	0.18	0.03	0.18	0.1	-0.01	0.1
Interest physics	0.32*	0.1	0.32*	0.29*	0.04	0.29*
Goal orientation physics	0.2*			-0.01		
Goals toward competition	0.1	0.1		-0.02	-0.02	
Generic physics problem solving (correct)		0.25**			-	
Multiple choice physics (correct)		-			0.25**	
Situational interest (catch and hold)		0.13			0.05	
Motives to participate	0.25**			0.07		
Gender science stereotypes	-0.05			-0.09		
Genderidentity (joint)	-0.08			-0.11		
Grit	-0.07			-0.3***		
Conscientiousness	-0.09			-0.15		
Entity Theory of Intelligence	0.14			0.11		
Physics self concept	0.29*	0.09	0.29*	0.2	0.04	0.2
Langeweile im Physikunterricht	0.08			0.12		
Sense of belonging	0.13	-0.09	0.19	0.32*	0.06	0.18
School grades		0.11			0.09	