

S3 Text

**Table A. Paper-and-Pencil: Fit Results LCM per Item Type**

Type	Model	NC	BIC	1: <i>p</i> (BIC)	2: <i>p</i> (BIC)	
D	Exploratory	2	2766	<.001		
		3	2661	.999	<.001	
		4	2674	.001		
	Item Heterogeneity	3	2607		>.999	
	Item Homogeneity	3(1)	2601			
		3(2)	2595			
		3(3)	2598			
	<u>Final</u>	3(1,2,3)	2581			
	CW	Exploratory	2	4013	<.001	
			3	3899	>.999	<.001
4			3934	<.001		
Item Heterogeneity		3	3839		>.999	
Item Homogeneity		3(1)	3834			
		3(2)	3831			
		3(3)	3840			
<u>Final</u>		3(1,2)	3826			
CDA		Exploratory	2	4047	<.001	
			3	3831	>.999	0.048
	4		3856	<.001		
	<u>Item Heterogeneity</u>	3	3825		0.952	
	Item Homogeneity	3(1)	3837			
		3(2)	3864			
		3(3)	3925			
	CBA	Exploratory	3	4280	<.001	
			4	4253	>.999	<.001
			5	4294	<.001	
Item Heterogeneity		4	4233		>.999	
Item Homogeneity		4(1)	4221			
		4(2)	4224			
		4(3)	4240			
		4(4)	4227			
<u>Final</u>		4(1,2,4)	4208			

Note. NC = the number of latent classes, the number between brackets refers to the class with constraints; *p* = BIC model probability of (1) select number of classes (2) select constraints; The best fitting model is underlined.

**Table B. Math Garden: Fit Results LCM per Item Type**

Type	Model	NC	BIC	1: <i>p</i> (BIC)	2: <i>p</i> (BIC)
WD	Exploratory	1	2839	<.001	
		2	2749	>.999	
		3	2784	<.001	
D	Exploratory	1	1330	0.018	
		2	1322	0.982	<.001
		3	1367	<.001	
	<u>Item Heterogeneity</u>	2	1303		>.999
	<u>Item Homogeneity</u>	2(1)	1293		
		2(2)	1304		
CW	Exploratory	1	4906	<.001	
		2	4785	0.999	0.165
		3	4798	0.001	
	<u>Item Heterogeneity</u>	2	4782		0.835
	<u>Item Homogeneity</u>	2(1)	4793		
		2(2)	4840		
CDA	Exploratory	1	3247	<.001	
		2	3209	0.992	0.003
		3	3219	0.008	
	Item Heterogeneity	2	3197		0.997
	<u>Item Homogeneity</u>	2(1)	3186		
		2(2)	3213		
CBA	<u>Exploratory</u>	1	4817	<.001	
		2	4763	0.920	>.999
		3	4768	0.080	
	Item Heterogeneity	2	4858		<.001
	Item Homogeneity	–	–		

Note. NC = the number of latent classes, the number between brackets refers to the class with constraints; *p* = BIC weights (1) select number of classes (2) select constraints; The best fitting model is underlined.