Appendix 2: Models tested in confirmatory factor analysis and results

Article: Through the patients' eyes - Psychometric evaluation of the Experienced Patient-Centeredness Questionnaire (EPAT-64)

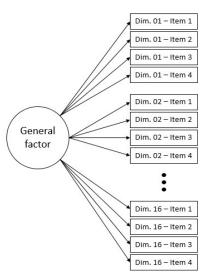
We developed items for each of the 16 dimensions of the integrative model of patient-centeredness.[1-3] Hence, we had a clear hypothesis which item should load on which dimension. We assumed that the 16 dimensions of PC are interrelated. Further, we hypothesized that there might be a general factor "patient-centeredness".

Based on those assumptions we tested five different models. Below you find a description of each model, including a sketch of the path model for with three dimensions. The real models included 16 specific dimensions.

Model 1 - Unidimensional model

All items load on a single general factor.

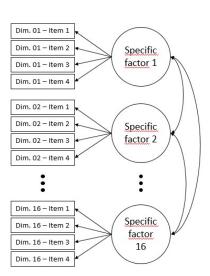
We tested this model to test whether the fit increases when we consider the 16 dimensions given in the integrative model of patient-centeredness.



Model 2 - Correlated first-order dimension model

- All items load on their respective dimension.
- The dimensions correlate freely.

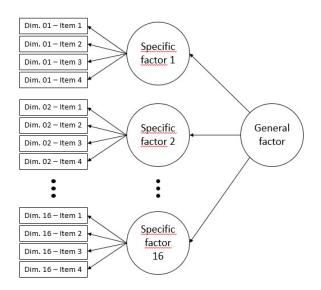
This model is a direct translation of the integrative model of patient-centeredness. The model makes no assumptions about the interrelations of the dimensions or about the existence of a general factor. Comparison with the next models allows us to investigate whether the fit increases when we introduce a general factor.



Model 3 - Hierarchical model

- All items load on their respective dimension.
- All dimensions load on a general factor.
- The dimensions correlate freely.

In this model all dimensions are associated with the general factor. There is no direct association between the general factor and the items. The effect of the general factor on the items is modelled indirectly through the dimensions.

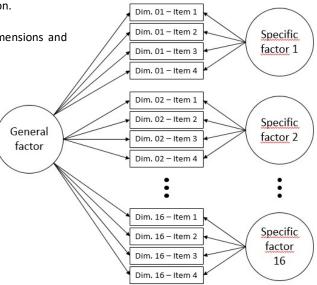


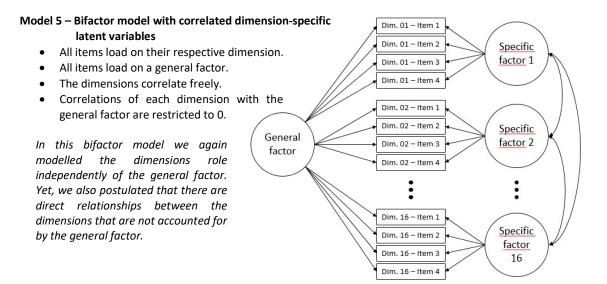
Model 4 - Bifactor model with uncorrelated latent variables

• All items load on their respective dimension.

 All items load on a general factor.
 Correlations of all dimensions and of dimensions and the general factor are restricted to 0.

In contrast to a hierarchical model, bifactor models allows to model the role of the dimensions independently of the general factor.[4] This is the canonical form where the dimensions are not interrelated directly. Hence, all common variance between the dimensions are modelled solely by the influence of the general factor.





All models were estimated using the robust maximum likelihood estimator and full information maximum likelihood to deal with missing values.

Table: Results of Confirmatory factor analysis – Beta (unstandardized loadings) and error variances

		Outpatients			Inpatients			
Dimension	Item	Beta	Beta		Beta	Beta		
		specific	general	Error	specific	general	Error	
		factor	factor	variance	factor	factor	variance	
Essential characteristics of the clinician	Item 1	2.852	0.959	0.339	2.544	0.994	0.394	
	Item 2	1.000	0.719	0.243	1.000	0.826	0.258	
	Item 3	2.263	0.873	0.315	1.668	0.860	0.405	
	Item 4	4.296	0.843	0.685	5.224	0.905	0.842	
	Item 1	0.661	0.879	0.260	0.509	0.908	0.304	
Clinician-patient	Item 2	1.000	0.957	0.330	1.000	0.959	0.437	
relationship	Item 3	0.328	0.687	0.864	1.337	0.541	1.239	
	Item 4	0.575	0.874	0.879	0.383	0.734	0.525	
	Item 1	1.736	1.024	0.503	2.092	1.014	0.550	
Patient as a	Item 2	1.000	1.000	0.380	1.000	1.000	0.480	
unique person	Item 3	3.397	0.664	0.778	4.623	0.619	0.778	
	Item 4	3.708	0.535	0.714	4.939	0.470	0.855	
	Item 1	1.096	0.539	0.859	0.982	0.489	0.834	
Biopsychosocial	Item 2	1.000	0.670	1.217	1.000	0.365	1.270	
perspective	Item 3	0.514	0.711	0.987	0.453	0.667	1.088	
	Item 4	1.153	0.469	0.958	1.051	0.413	0.934	
	Item 1	1.000	0.861	0.337	1.000	0.890	0.406	
Clinician-patient communication	Item 2	1.009	0.457	0.566	1.446	0.670	0.550	
	Item 3	0.865	0.701	0.255	0.818	0.675	0.253	
	Item 4	1.592	0.817	0.639	1.315	0.934	0.529	
Integration of medical and non-medical care	Item 1	1.000	0.296	1.123	1.000	0.499	0.975	
	Item 2	0.792	0.410	1.374	0.954	0.583	0.776	
	Item 3	0.955	0.375	1.027	0.961	0.542	0.923	
	Item 4	1.045	0.350	1.020	1.020	0.543	0.861	
Teamwork and teambuilding	Item 1	1.000	0.369	0.576	1.000	0.879	0.338	
	Item 2	1.351	0.500	0.469	0.937	0.934	0.354	
	Item 3	1.226	0.715	0.951	1.153	0.836	0.471	
	Item 4	0.213	0.576	1.706	0.274	0.760	1.929	
Access to care	Item 1	0.782	0.673	0.977	0.237	0.936	0.784	
	Item 2	1.000	0.412	0.588	1.000	0.651	0.510	
	Item 3	0.987	0.330	0.988	1.561	0.750	0.368	
	Item 4	0.776	0.374	1.022	0.128	0.660	0.484	

Tem 2 1.000 0.375 2.307 1.000 0.820 1.403 Item 3 0.364 0.827 0.410 0.311 0.969 0.425 Item 4 1.057 0.595 2.561 0.592 1.019 0.890 Item 4 1.000 0.739 0.835 1.000 0.813 0.463 Item 3 1.872 0.709 1.301 2.639 0.805 1.105 Item 4 3.257 0.202 1.523 10.717 0.504 1.403 Item 5 1.872 0.709 1.301 2.639 0.805 1.105 Item 6 1.000 0.681 1.350 1.000 0.721 1.241 Information Item 2 1.000 0.681 1.350 1.000 0.721 1.241 Information Item 3 0.732 0.819 0.868 0.557 0.957 1.002 Item 4 1.068 0.806 1.251 0.866 0.974 1.312 Patient Item 2 1.000 0.941 0.516 1.000 0.972 0.645 Item 3 2.304 0.819 0.778 2.360 0.917 0.812 Item 4 2.591 0.855 0.439 2.463 0.820 0.598 Involvement of family and friends Item 2 1.011 0.408 0.604 1.010 0.545 0.677 Item 3 0.975 0.495 1.106 0.809 0.853 1.255 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Patient Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 4 1.784 0.422 1.108 2.348 0.395 1.184 Patient Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602 0.422 0.905 Item 4 1.920 0.424 1.077 2.602 0.422 0.905 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 5 1.000 0.790 0.533 1.000 0.599 0.503 Item 6 0.998 0.891 0.454 0.771 0.836 0.633 Item 7 0.998 0.891 0.454 0.771 0.836 0.633 Item 8 1.251 0.684 0.457 1.109 0.364 0.633 Item 9 0.503 0.503 0.503 0.503 0.503 Item 1 0.998 0.891 0.454 0.757 0.906 0.636 Item 1 0.998 0.891 0.454 0.757 0.906 0.636 Item 2 1.000 0.790 0.533 1.000 0.599 0.503 Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 4 0.917 0.37	Dimension	Item	Outpatients			Inpatients		
Tem 2 1.000 0.375 2.307 1.000 0.820 1.403 1.40			specific	general	-	specific	general	_
and continuity of care		Item 1	0.501	0.609	1.295	0.467	0.782	1.227
of care Item 3 0.364 0.827 0.410 0.311 0.969 0.425 1.059 0.595 0.595 0.592 1.019 0.890 Patient safety Item 1 3.449 0.681 1.348 9.541 0.732 1.081 1.000 0.739 0.835 1.000 0.813 0.463 Patient safety Item 2 1.000 0.739 0.835 1.000 0.813 0.463 1.063 0.805 1.105 Item 4 3.257 0.202 1.523 10.717 0.504 1.403 1.081 0.797 0.804 0.857 Patient information Item 1 0.838 0.782 0.891 0.797 0.804 0.857 Item 2 1.000 0.681 1.350 1.000 0.721 1.241 Information Item 3 0.732 0.819 0.868 0.557 0.957 1.002 Item 4 1.068 0.806 1.251 0.866 0.974 1.312 Patient involvement in care Item 1 1.000 0.941 0.516 1.000 0.972 0.645 Item 3 2.304 0.819 0.778 2.360 0.917 0.812 Item 4 2.591 0.855 0.439 2.463 0.820 0.598 Involvement of family and friends Item 2 1.011 0.408 0.604 1.010 0.545 0.677 Item 3 0.975 0.495 1.106 0.809 0.853 1.255 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Patient empowerment Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602	and continuity	Item 2	1.000	0.375	2.307	1.000	0.820	1.403
Item 4		Item 3	0.364	0.827	0.410	0.311	0.969	0.425
Patient safety		Item 4	1.057	0.595	2.561	0.592	1.019	0.890
Patient safety Item 3		Item 1	3.449	0.681	1.348	9.541	0.732	1.081
Item 4 3.257 0.709 1.301 2.639 0.805 1.105 Item 4 3.257 0.202 1.523 10.717 0.504 1.403 Patient Item 1 0.838 0.782 0.891 0.797 0.804 0.857 Patient Item 2 1.000 0.681 1.350 1.000 0.721 1.241 Information Item 3 0.732 0.819 0.868 0.557 0.957 1.002 Item 4 1.068 0.806 1.251 0.866 0.974 1.312 Patient Item 1 1.000 0.941 0.516 1.000 0.972 0.645 Item 3 2.304 0.819 0.778 2.360 0.917 0.968 1.128 Item 4 2.591 0.855 0.439 2.463 0.820 0.598 Item 4 2.591 0.855 0.439 2.463 0.820 0.596 Item 4 2.591 0.408 0.604 1.010 0.545 0.677 Item 3 0.975 0.495 1.106 0.809 0.853 1.255 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Item 4 1.784 0.422 1.108 2.348 0.395 1.184 Patient Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Item 5 1.064 0.828 0.242 1.054 0.766 0.186 Item 6 0.998 0.891 0.454 0.771 0.836 0.638 Item 1 0.998 0.891 0.454 0.771 0.364 0.638 Item 1 0.998 0.891 0.454 0.771 0.364 0.638 Item 2 1.000 0.790 0.533 1.000 0.599 0.508 Item 3 1.251 0.684 0.457 1.109 0.364 0.638 Item 4 0.917 0.378 0.888 0.457 1.109 0.364 0.638 Item 5 1.200 0.790 0.533 1.000 0.599 0.508 Item 6 0.638 0.457 1.109 0.364 0.638 Item 7 0.684 0.457 0.457 1.109 0.364 0.638 Item 7 0.684 0.457 0.457 0.456 0.638 Item 7 0.684 0.457 0.457 0.468 0		Item 2	1.000	0.739	0.835	1.000	0.813	0.463
Patient information Item 1 0.838 0.782 0.891 0.797 0.804 0.857 1.241	Patient Salety	Item 3	1.872	0.709	1.301	2.639	0.805	1.105
Patient information Item 2 1.000 0.681 1.350 1.000 0.721 1.241 Information Item 3 0.732 0.819 0.868 0.557 0.957 1.002 Item 4 1.068 0.806 1.251 0.866 0.974 1.312		Item 4	3.257	0.202	1.523	10.717	0.504	1.403
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Item 4	Patient	Item 2	1.000	0.681	1.350	1.000	0.721	1.241
Patient involvement in care	information	Item 3	0.732	0.819	0.868	0.557	0.957	1.002
Patient involvement in care Item 2		Item 4	1.068	0.806	1.251	0.866	0.974	1.312
Item 2 2.194 0.792 1.395 1.971 0.968 1.128 Item 3 2.304 0.819 0.778 2.360 0.917 0.812 Item 4 2.591 0.855 0.439 2.463 0.820 0.598 Involvement of family and friends Item 1 1.000 0.382 0.722 1.000 0.556 0.734 Item 3 0.975 0.495 1.106 0.809 0.853 1.255 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Patient empowerment Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Item 5 1.064 0.828 0.242 1.054 0.766 0.186 Item 6 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Item 2 1.000 0.790 0.533 1.000 0.599 0.503 Item 2 1.000 0.790 0.533 1.000 0.599 0.503 Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 4 0.917 0.684 0.457 1.109 0.364 0.633 Item 5 1.251 0.684 0.457 1.109 0.364 0.633 Item 6 1.286 0.632 0.633 Item 7 0.998 0.891 0.457 1.109 0.364 0.633 Item 8 1.251 0.684 0.457 1.109 0.364 0.633 Item 9 0.594 0.686 0.457 0.686 0.446 Item 9 0.898 0.891 0.457 0.109 0.364 0.633 Item 9 0.898 0.457 0.457 0.864 0.633 Item 9 0.891 0.457 0.684 0.457 0.684 0.633 Item 9 0.891 0.457 0.684 0.633 Item 9 0.891 0.457 0.636 0.633 Ite	involvement in	Item 1	1.000	0.941	0.516	1.000	0.972	0.645
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Item 4		Item 3	2.304	0.819	0.778	2.360	0.917	0.812
Involvement of family and friends		Item 4	2.591	0.855	0.439	2.463	0.820	0.598
family and friends tem 2	Involvement of	Item 1	1.000	0.382	0.722	1.000	0.556	0.734
friends Item 3 0.975 0.495 1.106 0.809 0.853 1.255 Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Patient empowerment Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Item 4 1.000 0.773 0.309 1.000 0.737 0.187 Item 2 1.064 0.828 0.242 1.054 0.766 0.186 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Item 2 1.000 0.790 0.533 1.000 0.599 0.503 Support Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 4 0.917 0.836 0.633 Item 5 0.684 0.457 1.109 0.364 0.633 Item 7 0.836 0.633 Item 8 0.633 0.633 Item 9 0.684 0.457 0.109 0.364 0.633 Item 9 0.834 0.633 Item 9 0.834 0.457 0.109 0.364 0.633 Item 9 0.834 0.457 0.364 0.633 Item 9 0.834 0.334 0.334 0.334 0.334 Item 9 0.834	family and	Item 2	1.011	0.408	0.604	1.010	0.545	0.677
Item 4 0.927 0.537 1.277 0.906 0.793 1.065 Item 1 1.784 0.422 1.108 2.348 0.395 1.184 Item 2 1.000 0.860 0.868 1.000 0.842 0.951 Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Item 1 1.000 0.773 0.309 1.000 0.737 0.187 Item 2 1.064 0.828 0.242 1.054 0.766 0.186 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633 Item 4 0.917 0.836 0.633 Item 5 0.684 0.457 1.109 0.364 0.633 Item 7 0.836 0.633 Item 8 0.633 0.633 Item 9 0.684 0.457 0.109 0.364 0.633 Item 9 0.834 0.633 Item 9 0.834 0.633 Item 9 0.834 0.457 0.109 0.364 0.633 Item 9 0.834 0.633 Item 9 0.834 0.457 0.109 0.364 0.633 Item 9 0.834 0.457 0.457 0.457 0.634 0.633 Item 9 0.834 0.633 Item 9 0.834 0.633 0.633 Item 9 0.834 0.834 0.633		Item 3	0.975	0.495	1.106	0.809	0.853	1.255
Patient empowerment Item 2 1.000 0.860 0.868 1.000 0.842 0.951		Item 4	0.927	0.537	1.277	0.906	0.793	1.065
empowerment Item 3 1.742 0.419 1.304 2.176 0.620 1.275 Item 4 1.920 0.424 1.077 2.602 0.422 0.909 Physical support Item 1 1.000 0.773 0.309 1.000 0.737 0.187 Item 2 1.064 0.828 0.242 1.054 0.766 0.186 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Emotional Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 1	1.784	0.422	1.108	2.348	0.395	1.184
Item 4 1.920 0.424 1.077 2.602 0.422 0.909		Item 2	1.000	0.860	0.868	1.000	0.842	0.951
Physical support Item 1 1.000 0.773 0.309 1.000 0.737 0.187 Item 2 1.064 0.828 0.242 1.054 0.766 0.186 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Emotional support Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 3	1.742	0.419	1.304	2.176	0.620	1.275
Physical support Item 2 1.064 0.828 0.242 1.054 0.766 0.186 Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Emotional support Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 4	1.920	0.424	1.077	2.602	0.422	0.909
Item 3 0.222 0.468 0.729 0.246 0.686 0.446 0.686 0.446 0.686 0.446 0.686 0.446 0.686 0.446 0.686 0.446 0.686 0.686 0.446 0.686 0.6	Physical support	Item 1	1.000	0.773	0.309	1.000	0.737	0.187
Item 3 0.222 0.468 0.729 0.246 0.686 0.446 Item 4 0.917 0.378 2.828 0.653 0.820 2.548 Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Emotional support Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 2	1.064	0.828	0.242	1.054	0.766	0.186
Item 1 0.998 0.891 0.454 0.771 0.836 0.639 Emotional support Item 2 1.000 0.790 0.533 1.000 0.599 0.503 support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 3	0.222	0.468	0.729	0.246	0.686	0.446
Emotional support Item 2 1.000 0.790 0.533 1.000 0.599 0.503 1 tem 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 4	0.917	0.378	2.828	0.653	0.820	2.548
support Item 3 1.251 0.684 0.457 1.109 0.364 0.633		Item 1	0.998		0.454	0.771	0.836	0.639
		Item 2	1.000	0.790	0.533	1.000	0.599	0.503
Item 4 1.101 0.415 2.073 0.879 0.599 2.217		Item 3						0.633
		Item 4	1.101	0.415	2.073	0.879	0.599	2.217

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