

A head-to-head comparison of the EQ-5D-5L and 15D descriptive systems and index scores in a general population sample

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OBJECTIVES

The EQ-5D-5L and 15D are generic preference-accompanied health status measures with similar dimensions. In this study, we aim to compare the measurement properties of the EQ-5D-5L and 15D descriptive systems and index scores in a large general population sample.

METHODS

In August 2021, an online cross-sectional survey was conducted in a nationally representative adult general population sample in Hungary (n=1887). The EQ-5D-5L and 15D descriptive systems and index scores were compared in terms of ceiling and floor effects, informativity (Shannon's evenness index), agreement, convergent validity and known-groups validity for 20 different chronic physical and mental health conditions. Danish value sets were used to compute index scores for both instruments.

RESULTS

Among the corresponding dimensions, both the ceiling and floor effects were smaller for the EQ-5D-5L in most dimension pairs (exceptions: EQ-5D-5L anxiety/depression vs. 15D distress for the floor effect, and EQ-5D-5L anxiety/depression vs. 15D depression for the ceiling effect) (Table 1). For the rest of the 15D dimensions, the floor varied between 0.2 and 3.9%, while the ceiling between 50.3 and 94.4%.

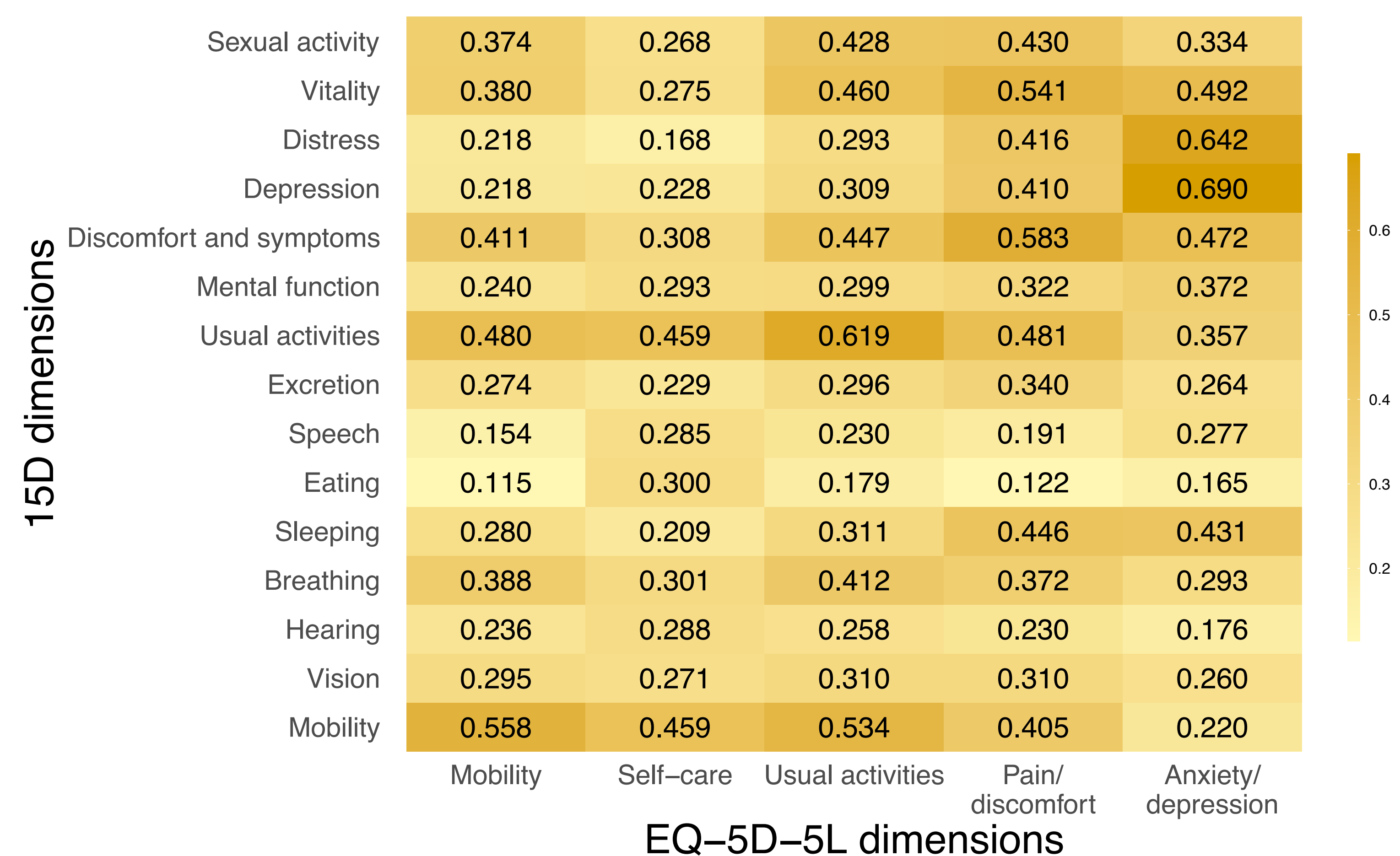
Table 1.

Floor and ceiling of EQ-5D-5L and 15D among the corresponding dimensions

EQ-5D-5L dimensions	Ceiling, %	Floor, %	15D dimensions	Ceiling, %	Floor, %
Mobility (walking)	66.0	0.4	Mobility (walking, moving about)	78.0	0.7
Usual activities (e.g. work, study, housework, family or leisure activities)	73.8	0.2	Usual activities (e.g. employment, studying, housework, free-time activities)	77.7	0.4
Pain/discomfort	50.8	0.5	Discomfort and symptoms (e.g. pain, ache, nausea, itching etc.)	68.2	0.5
Anxiety/depression	60.8	1.2	Depression (sad, melancholic or depressed)	68.6	1.1
			Distress (anxious, stressed or nervous)	55.9	1.7

The 15D index scores showed a smaller ceiling effect than the EQ-5D-5L (21% vs. 36%). The average informativity was better for the EQ-5D-5L dimensions (0.56 vs. 0.49). A strong correlation was found between the EQ-5D-5L and 15D index scores (Pearson's $r=0.671$), while their agreement was poor (ICC=0.363, 95% CI: 0.342-0.385). We found that corresponding dimensions correlated strongly and moderately, while the non-corresponding dimension pairs were correlated mostly weakly (Figure 1).

Figure 1. Heatmap showing Spearman's rank correlation between EQ-5D-5L and 15D dimensions



In most cases, the EQ-5D-5L was able to better discriminate between healthy respondents and those with chronic diseases; however, the difference in relative efficiency was insignificant in 36/41 condition groups (exceptions: dementia, other physical health conditions, bipolar depression, thyroid diseases and gastroesophageal reflux disease) (Table 2).

Table 2.

Known-groups validity of the EQ-5D-5L and 15D in some physical and mental health conditions

	n (%)	RE ^a	95% CI ^b
Healthy	383 (20.3)	-	-
Hypertension	527 (27.9)	1.071	0.884-1.365
Musculoskeletal diseases	461 (24.4)	1.092	0.930-1.350
Smoking addiction	381 (20.2)	1.096	0.896-1.442
Allergies	318 (16.9)	1.119	0.893-1.517
Cardiovascular disease	259 (13.7)	1.048	0.893-1.260
Gastrointestinal or hepatic disease	241 (12.8)	1.111	0.924-1.389
Hyperlipidaemia	240 (12.7)	1.056	0.869-1.334
Eye or visual diseases	231 (12.2)	0.971	0.813-1.170
Diabetes	205 (10.9)	1.152	0.930-1.502
<i>Gastroesophageal reflux disease</i>	<i>186 (9.9)</i>	<i>1.251</i>	<i>1.012-1.619</i>
Respiratory diseases	175 (9.3)	0.952	0.763-1.227
Arrhythmias	172 (9.1)	1.112	0.913-1.389
Anxiety, phobia, or panic disorder	172 (9.1)	1.075	0.910-1.308
<i>Thyroid diseases</i>	<i>171 (9.1)</i>	<i>1.269</i>	<i>1.007-1.689</i>
Sleeping disorders	169 (9.0)	1.164	0.969-1.440
Skin diseases	166 (8.8)	1.074	0.867-1.402
Headache, migraine	139 (7.4)	1.19	0.961-1.499
Hearing impairment	133 (7.1)	1.174	0.959-1.515
<i>Other physical health conditions</i>	<i>92 (4.9)</i>	<i>1.448</i>	<i>1.075-2.008</i>
<i>Bipolar depression</i>	<i>35 (1.9)</i>	<i>1.385</i>	<i>1.019-1.859</i>
<i>Dementia</i>	<i>18 (1.0)</i>	<i>1.465</i>	<i>1.035-2.085</i>

CI confidence intervals, RE relative efficiency.

^a Relative efficiency compared to 15D.

^b 2000 bootstrap samples with accelerated bias correction.

CONCLUSIONS

This is the first study to compare the measurement properties of the EQ-5D-5L and 15D in a general population sample. The EQ-5D-5L performs better than the 15D for most measurement properties. Our findings help to understand the differences between the EQ-5D-5L and 15D instruments and index scores and provide broad information for health economic evaluations and resource allocation decisions.

References:

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