Development of Physical and Mental Health Summary Scores from PROMIS Global Items

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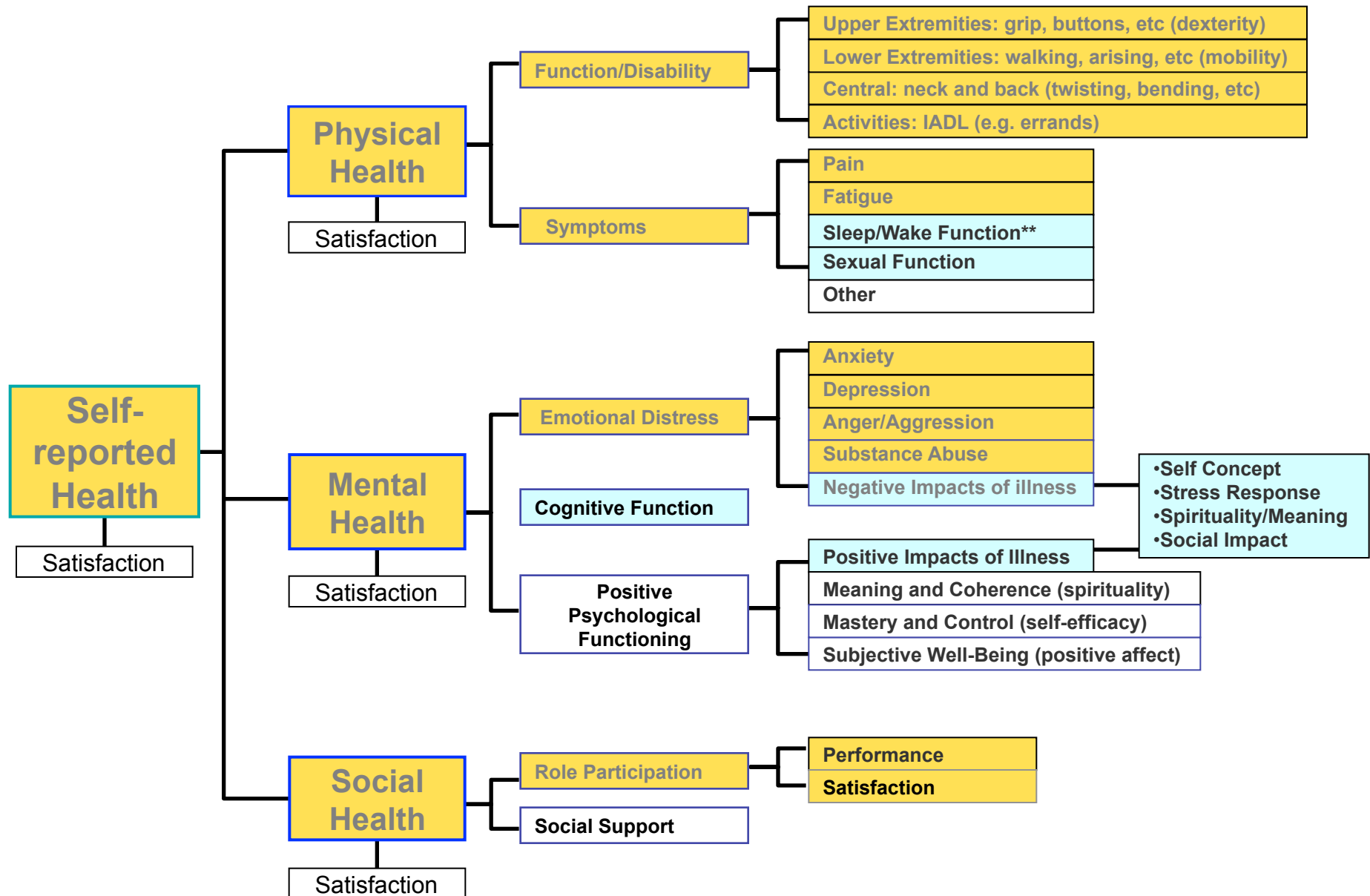
For Further Information

Hays, R. D., Bjorner, J., Revicki, D. A., Spritzer, K., & Cella, D. (2009, June 19, online). Development of physical and mental health summary scores from the Patient-Reported Outcomes Measurement Information System (PROMIS) global items. <u>Quality of Life Research</u>.

SF-36 Summary Scores

Physical and Mental health Composite Summary Scores (PCS & MCS)

- Reliability estimates: 0.88-0.93
- Completion time: 7-10 minutes
    - 3 minutes for SF-12

PROMIS Domain Framework

Self-reported Health
- Satisfaction

Physical Health
- Satisfaction
  - **Function/Disability**
    - Upper Extremities: grip, buttons, etc (dexterity)
    - Lower Extremities: walking, arising, etc (mobility)
    - Central: neck and back (twisting, bending, etc)
    - Activities: IADL (e.g. errands)
  - **Symptoms**
    - Pain
    - Fatigue
    - Sleep/Wake Function**
    - Sexual Function
    - Other

Mental Health
- Satisfaction
  - **Emotional Distress**
    - Anxiety
    - Depression
    - Anger/Aggression
    - Substance Abuse
    - Negative Impacts of illness
      - •Self Concept
      - •Stress Response
      - •Spirituality/Meaning
      - •Social Impact
  - **Cognitive Function**
  - **Positive Psychological Functioning**
    - Positive Impacts of Illness
    - Meaning and Coherence (spirituality)
    - Mastery and Control (self-efficacy)
    - Subjective Well-Being (positive affect)

Social Health
- Satisfaction
  - **Role Participation**
    - Performance
    - Satisfaction
  - **Social Support**

4-Item Global Physical Health Scale

- In general, how would you rate your physical health? (3)

- To what extent are you able to carry out your everyday physical activities …? (6)

- How would you rate your pain on average? (7)

- How would you rate your fatigue on average? (8)

4-item Global Mental Health Scale

- In general, would you say your quality of life is …? (2)

- In general, how would you rate your mental health …? (4)

- In general, how would you rate your satisfaction with social activities and relationships? (5)

- How often have you been bothered by emotional problems …? (10)

Sample (n = 21,133)

- Age: 18-100 (mean = 53)
- 52% Female
- 9% Latino/Hispanic, 9% black, 2% other
- 3% < high school, 16% high school only
- 59% Married
- 39% Working full-time

Dimensionality

- Item-scale correlations

  - Ranged from 0.53 to 0.80

- Internal consistency reliability = 0.92

- Confirmatory factor analysis (categorical) for one-factor model

  - CFI   = 0.927

  - RMSEA = 0.249 (*note: < .06 desirable*)

- PCA eigenvalues: **6.25**, **1.20**, 0.75, …

Two-Factor CFA Loadings

Item	Physical	Mental
3. Rate physical health	0.89+	
6. Carry out phys acti	0.81+	
7. Rate pain	0.64+	
8. Rate fatigue	0.58+	0.18
2. Rate quality of life	0.50	0.46+
4. Rate mental health		0.87+
5. Rate sat with social		0.88+
10. Emot. Problems		0.66+
1. Rate general health	0.88	
9. Usual social act	0.50	0.44

Physical Health 1-factor CFA

- Five items
  - RMSEA = 0.220
- r = 0.29 between two items:
  - In general, how would you rate your health (1)
  - In general, how would you rate your physical health? (3)
  - RMSEA = 0.081
- Dropped general health item (1)

Mental Health 1-factor CFA

- Four items
  - RMSEA = 0.196
- r = 0.16 between two items:
  - In general, how would you rate your mental health? (4)
  - How often have you been bothered by emotional problems? (10)
  - RMSEA = 0.084

Physical Health Item Parameters

Item	A	B1	B2	B3	b4
Global03	2.31	-2.11	-0.89	0.29	1.54
Global06	2.99	-2.80	-1.78	-1.04	-0.40
Global07	1.74	-3.87	-1.81	-0.67	1.00
Global08	1.90	-3.24	-1.88	-0.36	1.17

3. In general, how would you rate your physical health?
6. To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries or moving a chair?
7. How would you rate your pain on average?
8. How would you rate your fatigue on average?

3: Poor; Fair: Good; Very Good: **Excellent**
6: Not at all,; A Little; Moderately; Mostly; **Completely**
7: **No pain** (0) – Worse pain imaginable (10)
8: **None**; Mild; Moderate; Severe; Very Severe

Mental Health
Item Parameters

Item	A	B1	B2	B3	b4
Global02	2.41	-2.45	-1.32	-0.19	1.07
Global04	3.67	-2.31	-1.26	-0.33	0.67
Global05	2.98	-1.78	-0.90	-0.01	1.07
Global10	1.89	-2.82	-1.51	-0.25	0.99

2. In general, would you say your quality of life is …?

4.In general, how would you rate your mental health, including your mood and your ability to think?

 5. In general, how would you rate your satisfaction with social activities and relationships?

10. How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?

2, 4, 5: Poor; Fair: Good; Very Good: **Excellent**

10:      **Never**; Rarely; Sometimes; Often; Always

Physical and Mental Health (r = 0.63)

- Physical (α = 0.81)
  - r = 0.82 with EQ-5D
  - r = -0.75 (pain impact), -0.73 (fatigue), 0.71 (physical functioning), & -0.67 (pain behavior)

- Mental (α = 0.86)
  - r = 0.61 with EQ-5D
  - r = -0.71 (depressive symptoms), - 0.65 (anxiety), & 0.60 (satisfaction with discretionary social activities)

Global Physical and Mental Health Scales Summary

- Support for reliability and construct validity

- 2 minutes to administer

- Head-to-head comparisons needed with:
  - SF-36/SF-12/SF-8 summary scores
  - Other summary scores (e.g., based on PROMIS item banks)