Validation of the Dutch-Flemish PROMIS Pain Behavior and Pain Interference Item Banks in Patients with Rheumatoid Arthritis

**BACKGROUND**
In the assessment of patients with rheumatoid arthritis (RA) it is important to measure pain behavior and pain interference.

**AIM**
The aims of current study were to calibrate the Dutch-Flemish translation of the PROMIS Pain Behavior (DF-PROMIS-PB) and Pain Interference (DF-PROMIS-PI) item banks in Dutch and Flemish RA patients, and to evaluate the cross-cultural validity, reliability, and construct validity.

**METHODS**
- 1181 Dutch and 650 Flemish RA patients, 68% female, mean (SD) age: 56 (13) y
- Web-based or paper-and-pencil survey (each 50%) including full DF-PROMIS-PB and DF-PROMIS-PI item banks
- DF-PROMIS-PB: 39 items, 6-point Likert scale
- DF-PROMIS-PI: 40 items, 5-point Likert scale
- Calibration: Item Response Theory (IRT) modeling; confirmatory factor analysis to evaluate unidimensionality; fit of a graded item response model (GRM)
- Differential Item Functioning (DIF) for gender, age (median split), administration mode (paper vs. digital), language (Dutch vs. Flemish) and diagnoses (RA vs. chronic pain (a sample of 1140 patients from a previous study))
- By ordinal regression models with a McFadden’s $R^2$ change of 2% as critical value

**RESULTS**
- DF-PROMIS-PB and DF-PROMIS-PI demonstrated good fit to a one-dimensional model:
  - CFI = 0.976; 0.997 resp. and TLI = 0.975; 0.997 resp.
  - First factor: 50% (DF-PROMIS-PB) and 80% (DF-PROMIS-PI) of the total questionnaire variance
  - 14 of 741 (1.9%) DF-PROMIS-PB item pairs and 12 of 780 (1.5%) DF-PROMIS-PI item pairs marked as possibly locally dependent
  - Threshold-parameters range from -1.7 to 3.8 for DF-PROMIS-PB and from -0.5 to 5.4 for DF-PROMIS-PI (see the Item Information Curves (IIC) in figure 1)

**CONCLUSIONS**
- DF-PROMIS-PB and the DF-PROMIS-PI fit a GRM
- Nearly all Dutch item parameters match the US item parameters and likely Dutch-specific item calibrations are not needed
- DF-PROMIS-PB and DF-PROMIS-PI can be used to develop two Computer Adaptive Tests (CATs) for measuring pain behavior and pain interference respectively, in Dutch and Flemish RA patients