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# Rasch Analysis of the Psoriatic Arthritis Quality of Life and Dermatology Life Quality Index Measures in Psoriatic Arthritis

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## Background

Psoriatic Arthritis Quality of Life (PsAQoL) and Dermatology Life Quality Index (DLQI) measures cover different aspects of health-related quality of life (HRQoL) in people with psoriatic arthritis (PsA). There is uncertainty about the ability of each instrument to capture HRQoL information about skin and joint disease simultaneously.

### Objectives

- I. To assess the validity of the PsAQoL and DLQI in people with PsA and to determine their invariance to different sub-groups of including culture.
- II. To determine if the two measures can capture HRQoL domains relevant to both skin and joints in people with PsA.

## Methods

### Patients

Patients diagnosed with PsA recruited into GRACE project.<sup>1</sup> GRACE was a longitudinal observational study carried out over 15 countries in Europe, N America, S America and Asia. PsAQoL and DLQI data from baseline visit was used, including: age, gender, disease duration, disease type (oligo/polyarthrits), extent of skin involvement (Psoriatic Area Severity Index - PASI score).

### Analysis

Rasch analysis<sup>2</sup> was used to assess the validity, reliability, and invariance of the tools to different subgroups of patients. Coverage was defined by targeting and the ability to discriminate between patients with different degrees of disease severity. Rasch analyses were undertaken using RUMM 2030 software.<sup>3</sup>

## Results

### Patient characteristics

Total of 503 patients with PsA diagnosis (by a physician)

- Male = 287, female = 217
- Mean age = 50.8 years, SD = 13.1,
- Psoriatic arthritis duration, mean = 9.8 years, SD = 9.9
- Psoriasis duration, mean = 18.4 years, SD = 13.7
- Psoriasis area and severity index (PASI), mean = 4.2, SD = 6.5

### Fit to the Rasch Model

Region	N	PsAQoL		DLQI	
		$\chi^2$ interaction (p)	PSI	$\chi^2$ interaction (p)	PSI
UK	66	38.4812 (0.008)	0.870	14.227 (0.163)	0.819
N America	83	25.3853 (0.187)	0.887	15.6375 (0.111)	0.781
Europe	132	56.8823 (0.040)	0.826	24.221 (0.007)	0.825
S America	45	29.2163 (0.084)	0.800	30.854 (0.001)	0.803
Asia	27	108.359 (0.978)	0.868	14.894 (0.136)	0.841
Pooled	353	202.392 (<0.001)	0.851	167.741 (<0.001)	0.803

p > 0.05 for  $\chi^2$  suggests fit to the model, PSI = Person Separation Index reliability

### Invariance

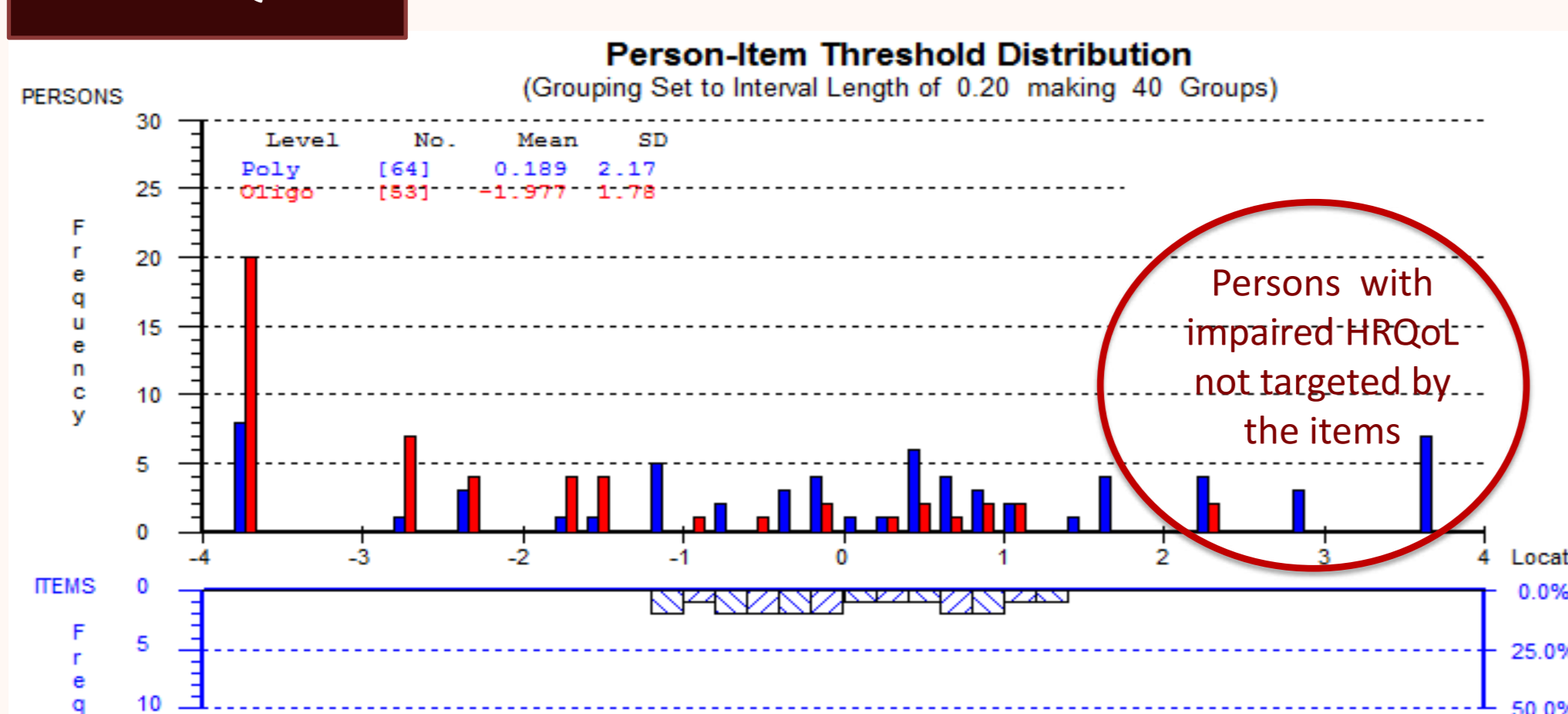
#### PSAQoL

- No cross-cultural bias in the countries combined within a region (e.g. N America = USA + Canada)
- There was not enough data to reliably assess the degree of cross-cultural (regional) biases which are likely to be present
- Within each region (cultural group), there was no significant bias by gender, age, disease subtype (oligo/polyarthrits), disease duration or degree of skin involvement (PASI cut-off point of 10)

#### DLQI

- No cross-cultural bias in the countries combined within a region
- There were gender biases on items 8 & 9
- 8. Over the last week, how much has your skin created problems with your partner or any of your close friends or relatives?
- 9. Over the last week, how much has your skin caused any sexual difficulties?

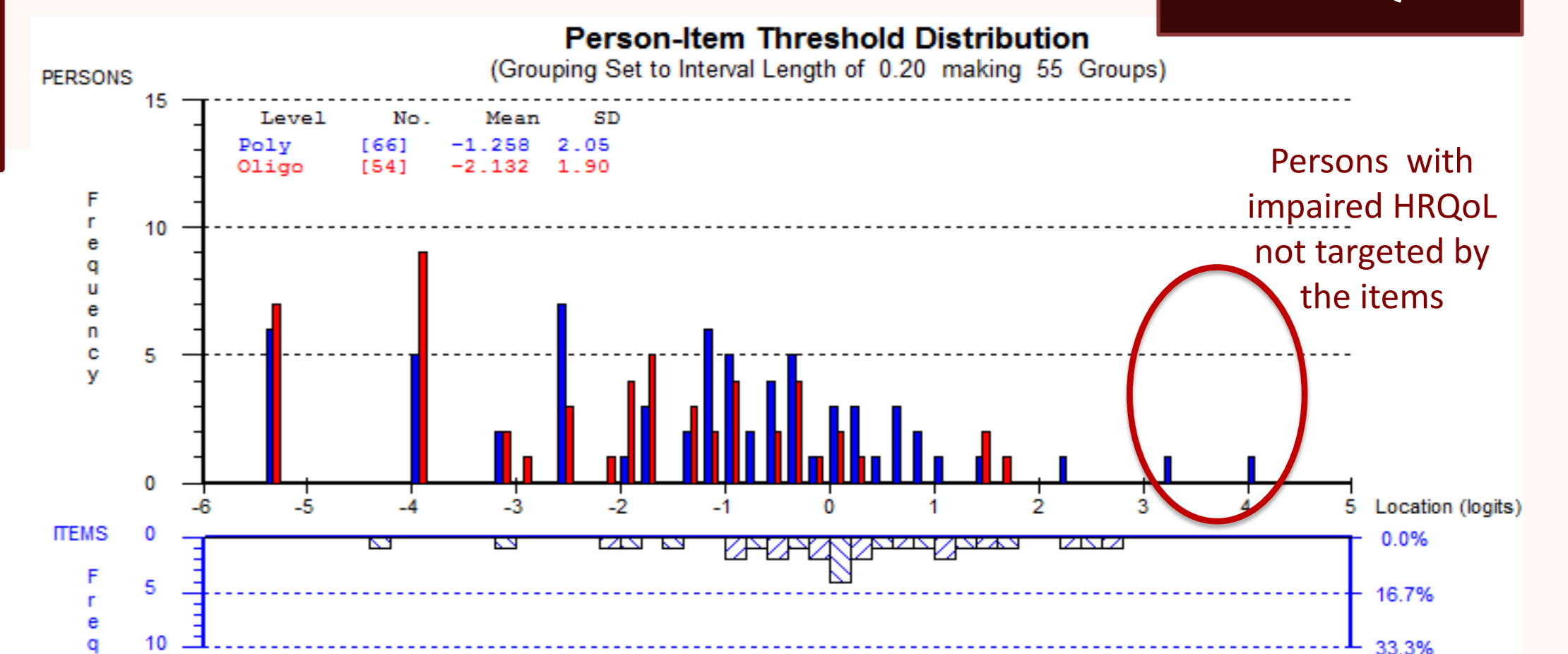
### PsAQoL



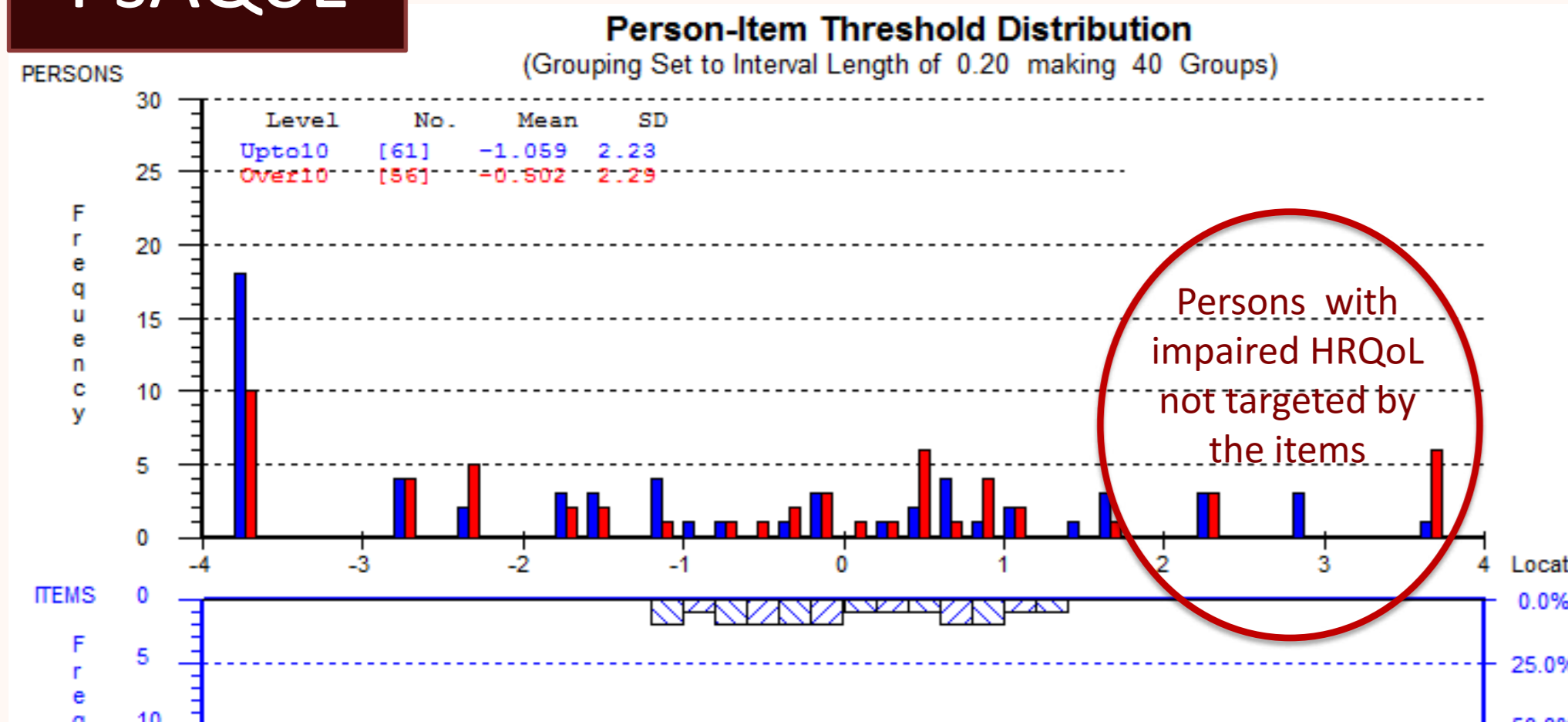
### Coverage of Joint Domain of HRQoL

No full coverage as some persons with severe HRQoL were not targeted by the items. However, DLQI was better than PsAQoL at targeting and discriminating between persons with oligoarthritis vs. those with polyarthrits

### DLQI



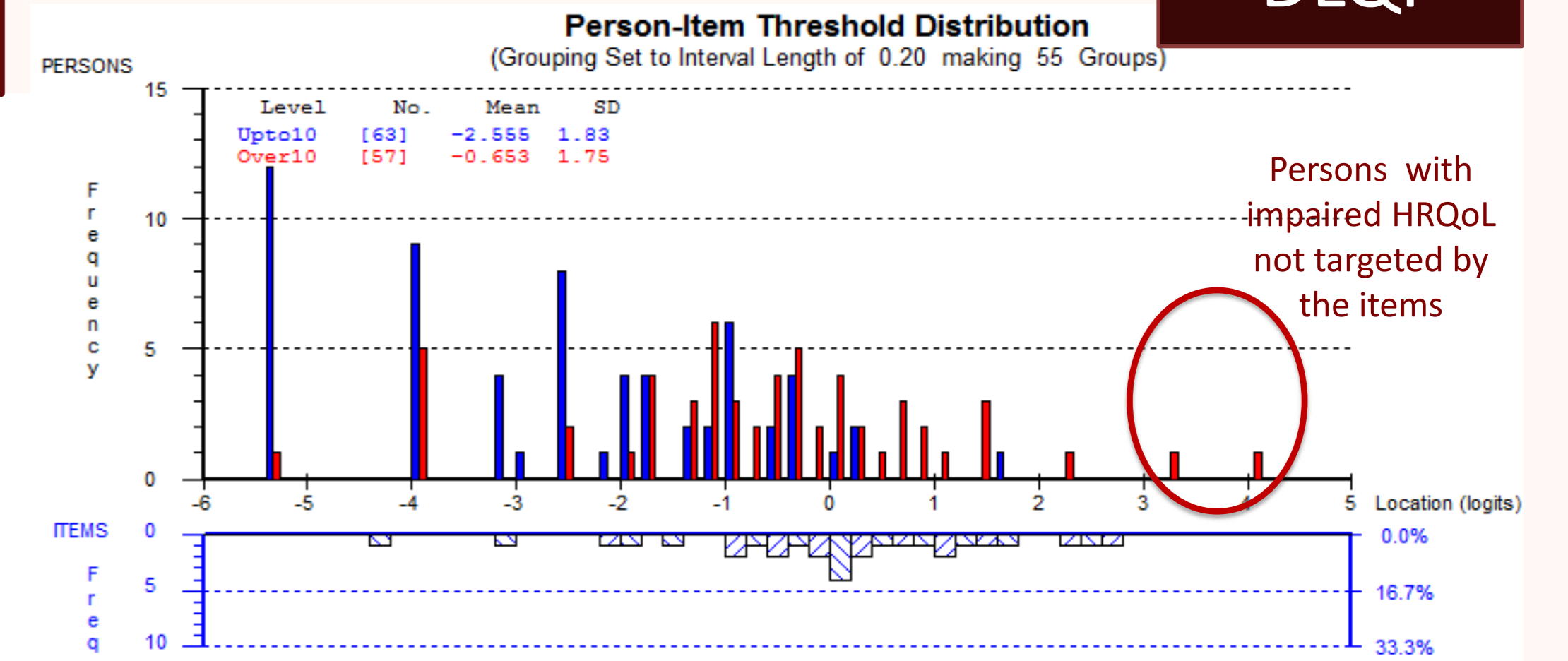
### PsAQoL



### Coverage of Skin Domain of HRQoL

No full coverage, as some persons with severe HRQoL were not covered by the items. DLQI was however better than PsAQoL at targeting discriminating between persons with mild skin disease (PASI <=10) vs. those with severe skin involvement (PASI >10)

### DLQI



## Conclusion

- There is not enough evidence from this analysis to suggest the cross-cultural validity of the PsAQoL and DLQI
- There is not enough evidence to suggest whether each measure captures fully the HRQoL domains that are relevant to both skin and joints. PsAQoL and DLQI appear to complement each other in capturing both joint and skin domains of HRQoL in people with PsA.

## References

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