

Cross-Cultural Analysis of the EORTC QLQ-C30



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Aims of the cross-cultural analysis project

- 1. Are there cultural or linguistic differences in the way each item of the QLQ-C30 is answered?**
- 2. Do different cultures place different importance on each aspect of QoL?**



Assembly of project database

- **QLQ-C30 data received from:**
 - **EORTC clinical trials/field studies**
 - **Other sources**
- **Studies recoded into standard format**



Datasets received

Type of study	No. of studies	No. of patients
EORTC studies	54	13,144
Other studies	70	24,986
Total	124	38,130



Amount of data available by translation

German	9,434	Korean	501
English	6,242	Polish	420
Norwegian	4,873	Chinese (Taiwan)	345
Dutch	4,557	Turkish	255
French	3,210	Farsi	167
Danish	2,543	Greek	124
Swedish	1,230	Russian	119
Spanish	982	French (Canada)	110
Chinese (Mandarin)	933	Hungarian	104
Italian	876	Portuguese (Brazil)	101



Differential Item Functioning (DIF) Analyses

- Originally used in educational testing
- Can identify whether an item in a scale functions differently relative to other items in the same scale



DIF analyses

- **DIF analyses can be conducted by:**
 - Translation
 - Cultural/geographic grouping
 - Ethnicity
 - Age group
 - Etc.



Methods used for DIF analyses

- **Aim:** Does translation of the QLQ-C30 (or other factor) affect response to an item after adjustment for overall scale score?
- Ordinal/binary logistic regression used
- Analyses also adjusted for:
 - Age
 - Gender
 - Cancer site
 - Stage (no cancer; I-III; IV/metastatic)



Interpretation of DIF analyses

- **Because of multiple testing issues have used stricter rules to denote moderate to large DIF:**
 - 1. Statistically significant DIF ($p < 0.001$)**
 - 2. Size of DIF coefficient ($|\log \text{ odds ratio}| > 0.64$)**



Possible reasons for DIF

- **Genuine cultural differences**
 - **Translation/linguistic differences**
 - **Other reason (confounding variable)**
 - **“Pseudo-DIF” arising from DIF in another item in same scale:**
 - **Results sum approximately to zero**
 - **Unclear which item causes the DIF**
-



Interviews

- **Structured interviews with bilingual people (mainly conducted by MSc student)**
 - **Help distinguish between translation and cultural DIF**
 - **Both quantitative and qualitative data collected**
 - **63 interviews conducted**
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DIF analyses by translation

- **Examined 13 translations with data for >200 respondents**
- **Found at least one significant DIF effect for every translation**
- **Paper provisionally accepted by Quality of Life Research**



Example of translation DIF: Emotional Functioning scale, Swedish v English

		Adj. Log OR	95% CI
Q21	Did you feel tense?	-0.30	(-0.48, -0.13)
Q22	Did you worry?	-0.29	(-0.46, -0.12)
Q23	Did you feel irritable?	-0.32	(-0.50, -0.15)
Q24	Did you feel depressed?	0.84	(0.67, 1.02)



Example of suspected translation DIF (Q24)

- **English:**
 - **Did you feel depressed?**
- **Swedish:**
 - **Har Du känt Dig nedstämd?**
- **All three Swedish interviewees expected higher scores for Swedish because of translation**



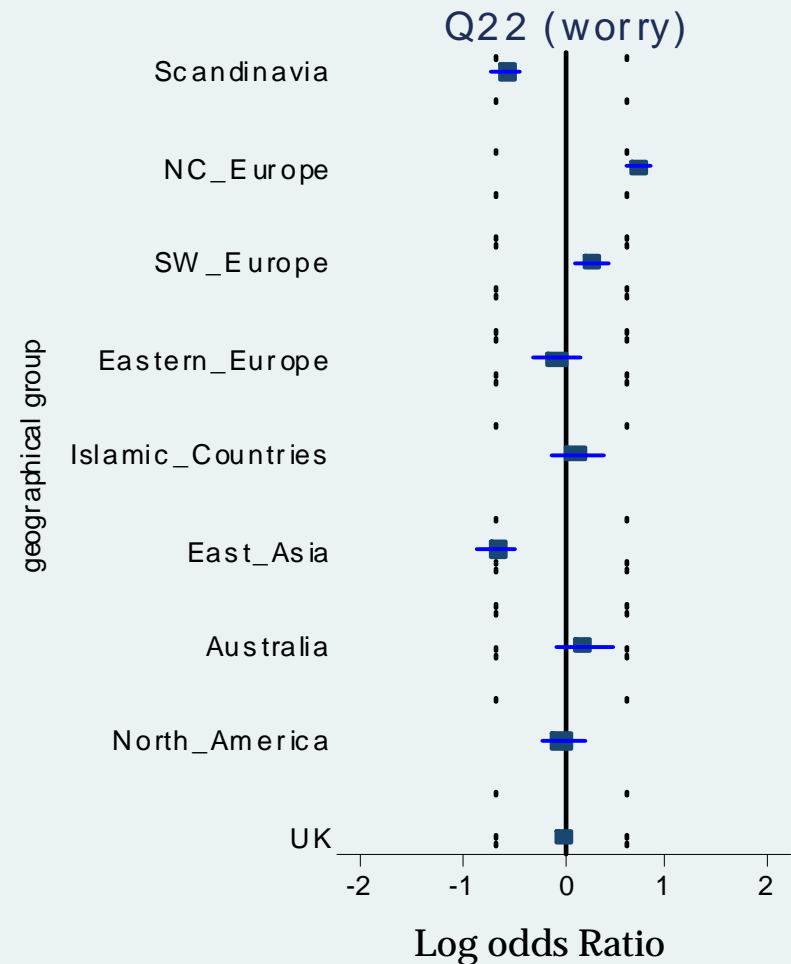
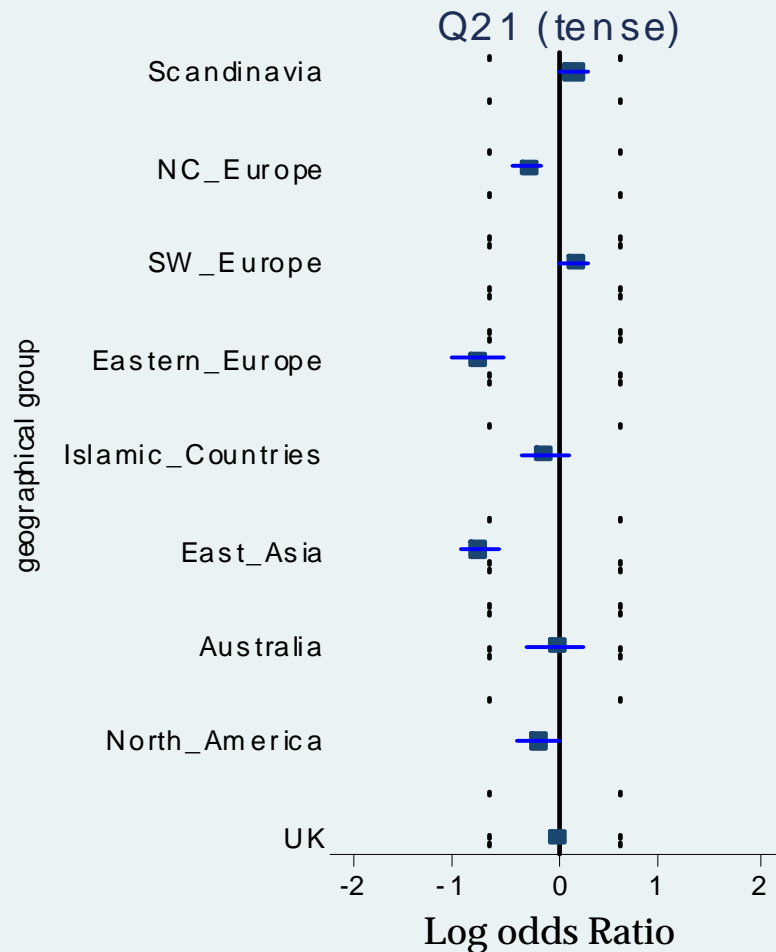
DIF analyses by cultural grouping

- **UK/North America/Australia give similar results**
- **Some differences between UK and rest of Europe (e.g. for pain scale)**
- **Eastern Europe shows some striking differences (e.g. for role functioning scale)**
- **East Asian countries give consistent results; often very different response patterns to Europe**

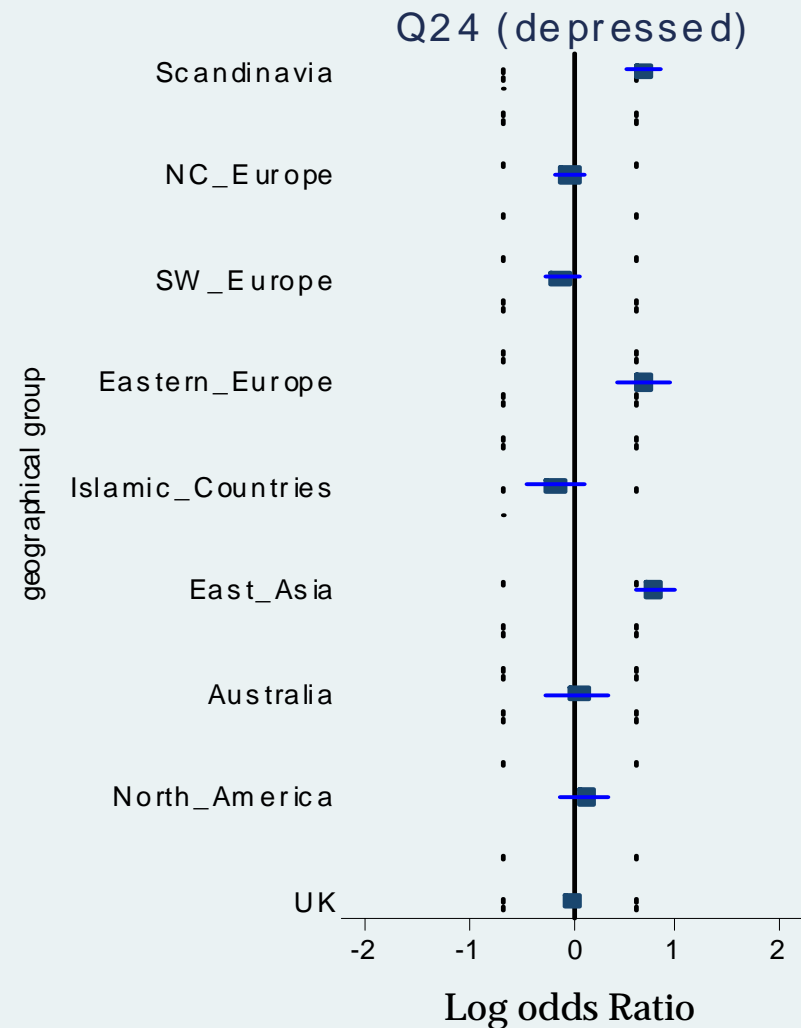
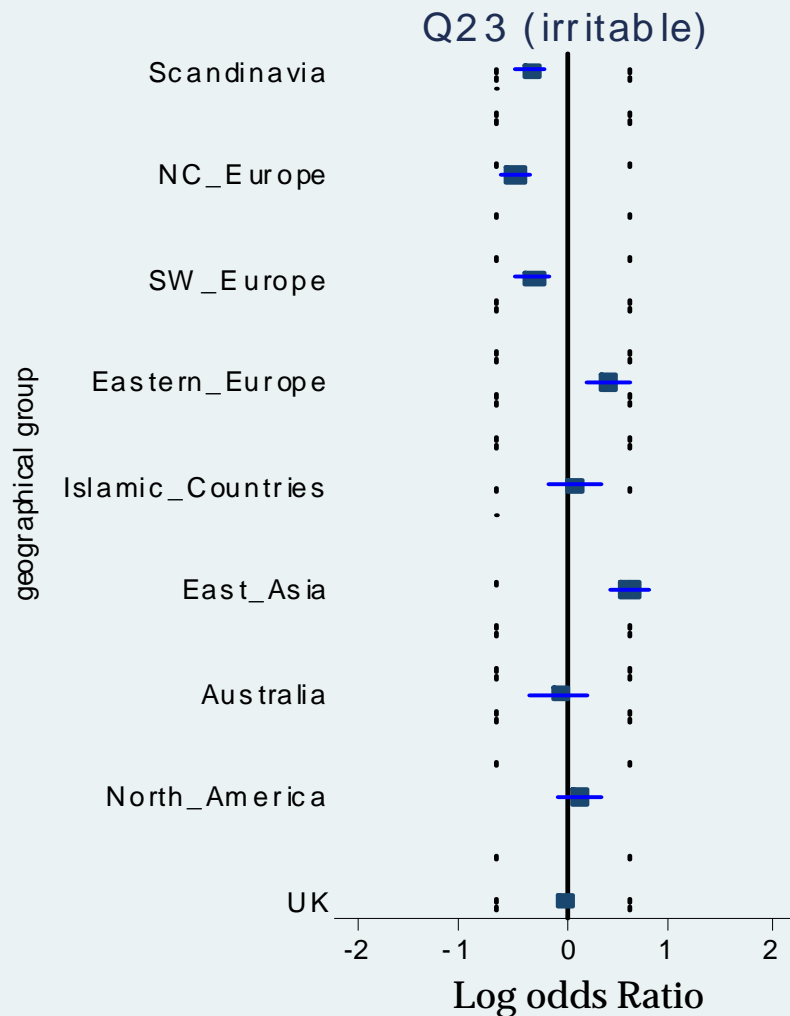


Cultural DIF: Emotional Functioning Scale (1)

Emotional functioning (EF) (adjusted)

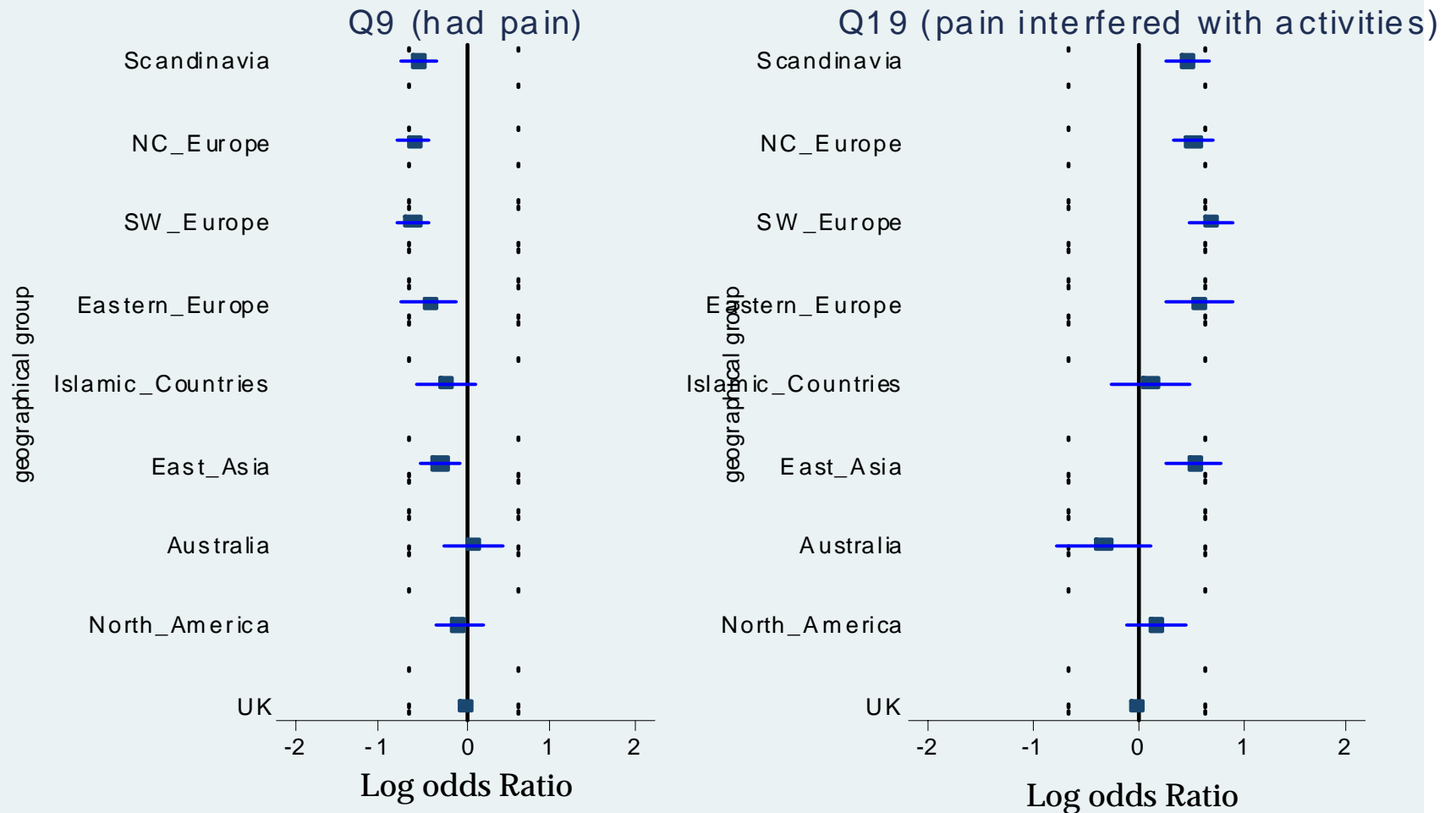


Cultural DIF: Emotional Functioning Scale (2)



Cultural DIF: Pain

Pain (PA) (adjusted)



Possible cultural DIF effect?

Multilingual countries

- One Singapore study used random assignment to English or Chinese translation
- For many scales (RF, EF, CF, PA) Singaporeans using English give results more similar to other Chinese speakers than to UK/USA
- Contrasts with e.g. Belgium (where results follow linguistic pattern)



Other DIF analyses

- **Ethnicity (US data only)**
 - No clear patterns
- **Age group**
 - DIF found for CF scale (older group more likely to have difficulty remembering things)



Summary: DIF analyses

- **Most translations showed similar response patterns but some important differences identified**
- **Not always clear whether DIF was cultural or linguistic**



Future analyses

- **Do different countries place different emphasis on each aspect of QoL?**
 1. **Regression methods to determine relationship of each scale score to overall QoL (Q30 of QLQ-C30)**
 2. **Structural equation modelling (SEM)**



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