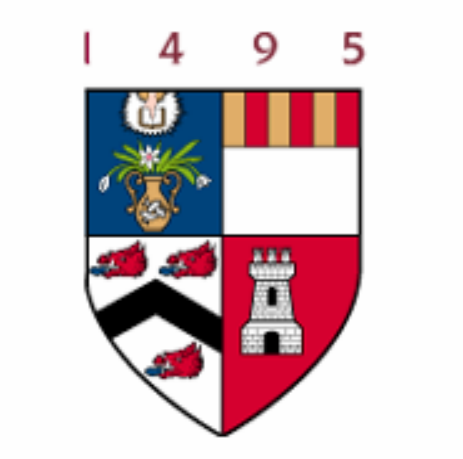
Cross-Cultural Analysis of the EORTC QLQ-C30



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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 emphasis on each aspect of quality of life?

Assembly of project database

- Large amount of QLQ-C30 data received from:
  - EORTC clinical trials/field studies
  - Other individuals worldwide
- All datasets 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 (1)

- Previously known as item bias
- Originally used in educational testing to identify items unfair towards particular ethnic groups, males/females etc.
- Variety of DIF methodologies have been used

Differential Item Functioning (DIF) Analyses (2)

- In this study DIF analyses used to identify whether an item in a scale functions differently with respect to:
  1. Translation used
  2. Cultural/geographical grouping
- relative to other items in the same scale

Methods used for DIF analyses

- Ordinal logistic regression
- Dependent variable:
  - Response to item
- Independent variables:
  - Translation
  - Overall scale score
  - Adjustment factors (age, gender, cancer site, stage of disease)

Interpretation of DIF analyses

- Issues with multiple statistical testing
- Have used stricter rules to denote what counts as moderate to large DIF:
  1. Statistically significant DIF ($p<0.001$)
  2. Size of DIF coefficient

Possible interpretations of a significant DIF effect

- Translation/linguistic differences
- Genuine cultural differences
- Other reason (confounding variable)
- "Pseudo-DIF" arising from DIF in another item in same scale:
  - Results within a scale sum approximately to zero
  - Unclear which item is causing the DIF

Example: Role Functioning scale: Polish v English

		Adj. Log OR	95% CI
Q6	Limitations with work	0.76	(0.41, 1.10)
Q7	Limitations with hobbies	-0.59	(-0.95, -0.23)

What is reason for this DIF effect?

- Poles tend to report relatively more limitations with work than hobbies
  - Problem with Polish translation of Q6?
  - Problem with Polish translation of Q7?
  - Cultural difference?

Interviews

- Structured interviews with bilingual people
- Help distinguish between translation and cultural DIF
- 63 interviews conducted
- Both quantitative and qualitative data collected

Emotional Functioning scale, Norwegian v English

		Adj. Log OR	95% CI
Q21	Did you feel tense?	0.23	(0.12, 0.35)
Q22	Did you worry?	-0.70	(-0.82, -0.59)
Q23	Did you feel irritable?	-0.36	(-0.47, -0.24)
Q24	Did you feel depressed?	0.71	(0.59, 0.84)

Example of suspected translation DIF (Q22)

- **English:**
  - **Did you worry?**
- **Norwegian:**
  - **Har du vært engstelig?**
- **Two out of three Norwegian interviewees expected higher scores for Norwegian because of translation**

DIF analyses by translation

- Examined 13 translations with data available for >200 respondents
- Found at least one significant DIF effect for every translation
- In a small number of cases specific translation reason identified from interviews with bilingual people

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 to each other; often very different response patterns to Europe

Possible cultural DIF effect? Bilingual countries

- For many scales Singaporeans using English give results more similar to other Chinese speakers than to UK/USA
- Contrasts with Europe (where results tend to follow linguistic patterns)

Summary: DIF analyses

- Most translations and geographical groups showed similar response patterns but some important differences identified
- Not always clear whether DIF was cultural or linguistic
- Patterns more clearly explained when countries grouped by translation than by culture

Scale-level cultural analyses

- **Regression analyses**
- **Dependent variable:**
  - **QL2 (overall QoL scale score)**
- **Independent variables:**
  - **Functional scale scores (PF2, RF2, EF, CF, SF) plus fatigue (FA)**
  - **Geographic groups**
  - **Scale score/geographic group interactions**
  - **Covariates (adjustment factors)**

Significant interactions (p<0.05)

	Scand-inavia	N Centr Europe	South Europe	East Europe	Islamic	East Asia	Austr-alia	North America
PF2	-				-			
RF2				-				
EF					-	+		
CF						-		
SF			-			-		
FA		-	-					

Summary: regression analyses

- Differences identified in how different cultural groups value aspects of their QoL
- Only significant interaction (using $p<0.001$) was that those from North Central Europe tended to place less emphasis on absence of fatigue

Contributors (1)

- We acknowledge the support of EORTC groups (contributed 54 studies)

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