Adapting the European Health Literacy Survey Questionnaire for children aged 9 to 10

TM Bollweg, O Okan, U Bauer, J Bröder, AM Fretian, P Pinheiro

Bielefeld University, Bielefeld, Germany

✉️ torsten.bollweg@uni-bielefeld.de

💻 www.uni-bielefeld.de/cpi
婶 www.hlca-consortium.com
Disclosure

- No commercial interest
- No financial relationship
- Funded 100% by German Federal Ministry of Education and Research (Grant No: 01EL1424A)
Outline

1. Background
2. Methods
3. Results
4. Updated results
5. Discussion
Health literacy – a definition:

Health literacy is linked to literacy and entails people’s knowledge, motivation and competences.

[Sørensen et al., 2012]
Health literacy – a definition:

Health literacy is linked to literacy and entails people’s knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course.

→ 4 action areas  
→ 3 health domains  

[Sørensen et al., 2012]
1 Background

Health literacy of children is important.
1 Background

Only **two tests** available in German to assess children’s health literacy (<13 years)  
[Okan et al. 2018]

**Sixteen** tools available in English  
[Bollweg & Okan 2019]

**No** tool available for our purpose  
(general HL, multidimensional)
1 Background

  Methods of Measuring Health Literacy of Children
- Aim: Questionnaire Development
- Focus: General health literacy
- Target group: 4th grade students in Germany
1 Background

The **HILS•EU** Questionnaire

- 47 items, self-reported health literacy
- Widely used and validated *among adults* [Pelikan & Ganahl 2017]
1 Background

The HLS\OEU Questionnaire

- General HL
- Multidimensional:
  - **Four** action areas:
    - Access, understand, appraise, and apply health information
  - **Three** health domains:
    - healthcare, disease prevention, and health promotion
1 Background

The HLS EU Questionnaire

Self-reported HL = Perceived difficulty of accessing, understanding, appraising, and applying health information

How easy or difficult is it for you to...

• ...find information about symptoms of illnesses that concern you? (access health information, healthcare)

• ...judge which health screenings you should have? (Appraise health information, disease prevention)

• ...make decisions to improve your health? (Apply health information, health promotion)
2 Methods

Study design

- Item adaptation (language & content)
- Cognitive testing (n=30)
- Quantitative pilot (n=907)
  - Written classroom survey
  - Quota sampling
  - 31 schools in North-Rhine Westphalia, Germany
  - Students in 4th grade (aged 9-10)
- Statistical analyses: EFA, CFA, Cronbach’s Alpha
3 Results

Item adaptation

- Simplified, modified, specified, shortened
- **26 items** (9 healthcare, 8 disease prevention, 9 health promotion)
3 Results

Item adaptation

On a scale from very easy to very difficult, how easy would you say it is to...

...find information on treatments of illnesses that concern you?
(HLS-EU-Q, Item 2)

How easy or difficult is it for you to...

...find out how to recover quickly when you have a cold?
(Adapted item – translation from German)
Cognitive pretest

- Questionnaire well understood overall
- Misinterpretations of some items
3 Results

Cognitive pretest

How easy or difficult is it for you...

to find out how to recover quickly when you have a cold?

✔ “I would ask the doctor first, because he’s informed best. Sometimes, I also look up things on the Internet or ask my parents.”

~ “sometimes I know right away, sometimes I don’t”

✗ “my mother usually makes chicken soup for me when I have a cold”
3 Results

Cognitive pretest

What is measured?

• Perceived difficulty?
• Knowledge?
• Social support?

→ Most items interpreted as intended
3 Results

Exploratory Factor Analysis

• Expected: 3 or 4 factors
• Observed: 1 major factor (Eigenvalue 6.7; 25.6% explained variance)
• Fixed to 4 or 3:
  → Items do not correspond to conceptual domains

Confirmatory Factor Analysis

• High correlations between action areas (r=.75-.92) and health domains (r=.87-.97)
  → Factors not distinct
3 Results

Item selection

- 13 of 26 items excluded based on factor-loadings in 1-factor model

Resulting scale

- 13 items
- Good internal consistency ($\alpha=0.814$)
- Good model fit (1-factor model: NFI=.906; CFI=.939; RMSEA: .042)
4 Updated Results

Item selection

- Based on missingness (<8%)
- Item difficulty (20%-85%)
- Item discrimination (>0.330)

Resulting scale

- 16 items
- Good internal consistency ($\alpha=0.800$; split-half: 0.791)
- Model fit unsatisfactory (1-factor model: NFI=.832; CFI=.875; RMSEA: 0.050)
5 Discussion

• First study to adapt HLS-EU-Q for children attending 4\textsuperscript{th} grade in Germany
• Mostly well-understood and feasible
• 16-item questionnaire with high internal consistency
• Validity needs further investigation (construct validity, face validity)
5 Discussion

• 3- or 4-factor models not confirmed
  → Less complex model?
• Alternative adaptations?
Thank you for your attention!

TM Bollweg, O Okan, U Bauer, J Bröder, AM Fretian, P Pinheiro

Bielefeld University, Bielefeld, Germany

✉️ torsten.bollweg@uni-bielefeld.de

🗂️ www.uni-bielefeld.de/cpi

🌐 www.hlca-consortium.com
References


References

References (pictures)

• „The world with borders 2005”, by user “Roke”, colours added, https://commons.wikimedia.org/wiki/Maps_of_the_world#/media/File:BlankMap-World-v2.png (CC BY-SA 3.0)

• Lage von Nordrhein-Westfalen in Deutschland, User „TUBS“, (CC BY-SA 3.0)

CC0 Public Domain: https://creativecommons.org/publicdomain/zero/1.0/deed.de
Attribution-ShareAlike 3.0 Unported (CC BY-SA 3.0): https://creativecommons.org/licenses/by-sa/3.0/deed.en
5 Discussion