

# Systematic Review of Health Literacy Measurement Instruments for Children and Adolescents and Adaptation of the HLS-EU-Q for Kids

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## SYSTEMATIC REVIEW

### Objectives, Methods, and Search Design

**Objective**  
To review health literacy measurement and assessment instruments for children and adolescents

**Methods**  
Systematic Literature Search

**Database Search**  
PubMed, CINAHL, PsycNET, ERIC, FIS

### Search Algorithm

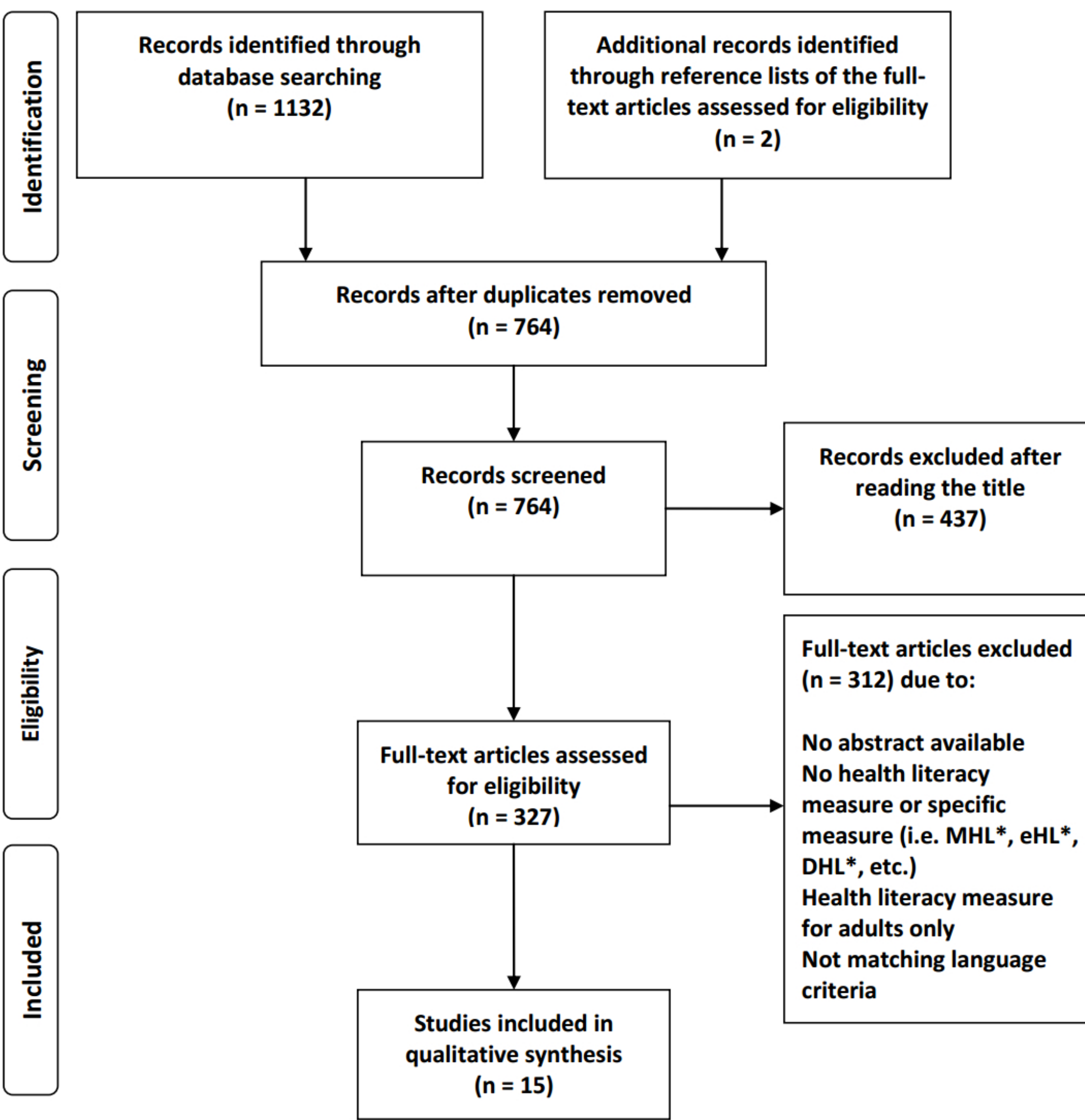
((health literacy[Title/Abstract]) AND ((child\*[Title/Abstract]) OR (adolescen\*[Title/Abstract]) OR (youth[Title/Abstract])) AND ((measur\*[Title/Abstract]) OR (test\*[Title/Abstract]) OR (tool\*[Title/Abstract]) OR (instrument\*[Title/Abstract]) OR (questionnaire\*[Title/Abstract]) OR (assessment\*[Title/Abstract]) OR (screen\*[Title/Abstract]) OR (survey\*[Title/Abstract]) OR (psychometric\*[Title/Abstract]) OR (review\*[Title/Abstract]))))

### Inclusion & Exclusion Criteria

Criterion	Inclusion	Exclusion
Time	January 1990 – July 2015	Studies before 1990 and after July 2015
Language	English, German	Any other language
Type of publication	Original publication published in peer-reviewed journals or reports	Any non-original publication, any editorials, letters to editors, theses, books, opinions.
Focus of study	Any study reporting on a general health literacy instrument, its use, development or validation process	Any study reporting on a context specific health literacy instrument, and any non-health literacy instrument
Study population	Children and adolescents (<= 17 years)	Any population older than 17 years
Setting	Any Setting	Nil
Country	Any country	Nil

### Quantitative Results

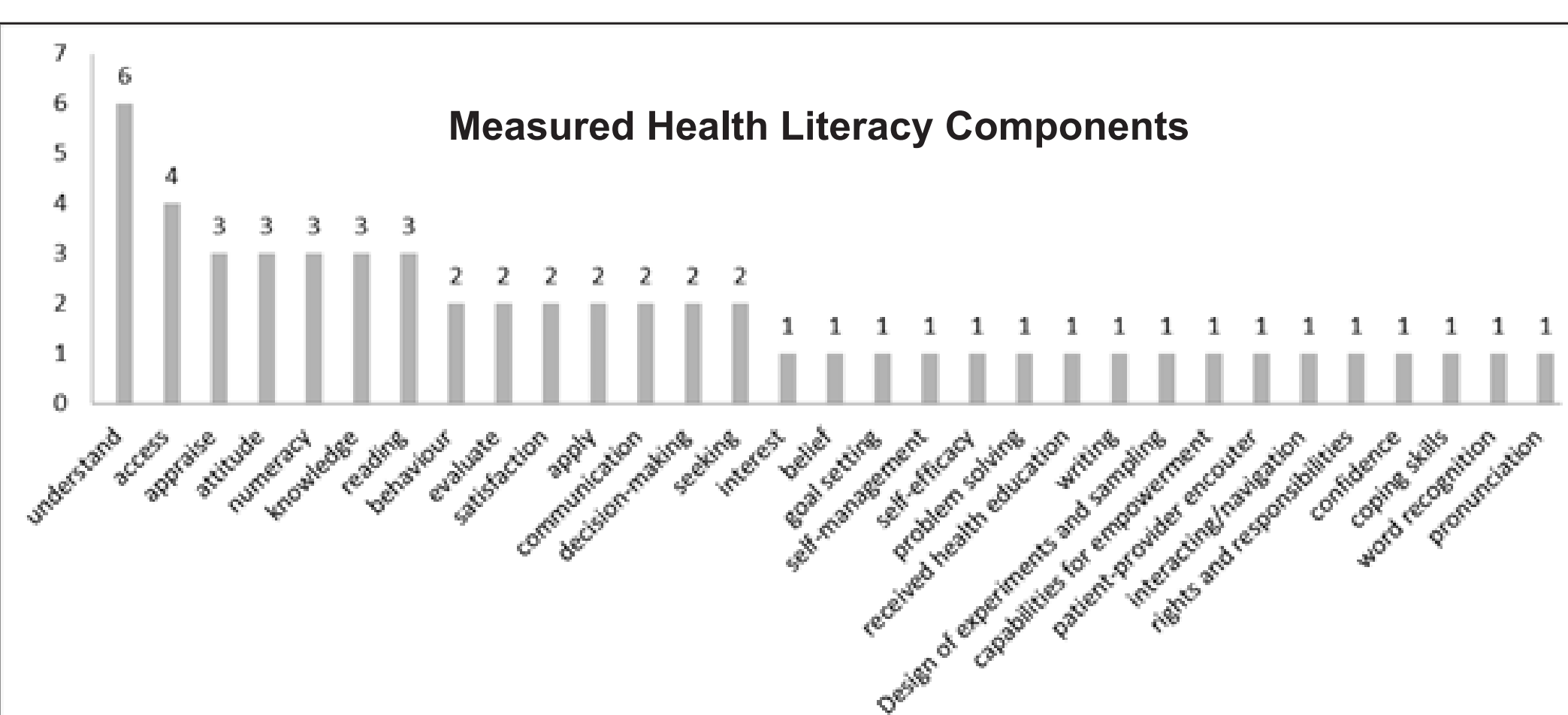
#### Flow Chart



STUDY	YEAR	COUNTRY SETTING	INSTRUMENT ITEMS	TYPE	AGE GRADE	POPULATION	MODEL	DOMAIN
1. Davis et al	2006	USA   HC	REALM-Teen (66 Words)	PBA	10-19y.	N=1533	Functional Literacy: 5 Reading Levels	Word Recognition
2. Brown et al	2007	USA   HEC	KidsHealth KidsPoll of Health Literacy   8	SR	9-13 y. 5th – 8th	N=1178	Adaptation of NHES Model and Definition	Understanding Information Seeking
3. Hubbard and Rainey	2007	USA   SCH	(HEAP) Database 30 Items	PBA	Middle/High School	N=669	Health-related Concepts and Skills (Tobacco, Physical Activity, and Nutrition)	Communication, Information Seeking, Goal Setting, Decision Making, Self-management
4. Chisolm and Buchanan	2007	USA   HC	TOFHLAd   67 Items	PBA	13-17 y.	N=50	Functional Literacy	Health-related Reading Numeracy; Comput. Skills
5. Steckelberg et al	2009	Ger   SCH	CHC Test   72 Items	PBA	10-11 <sup>th</sup>	N=322	Critical Health Literacy Model based on 4 Scenarios	Understanding Searching Skills Basic statistics Design (Experiment/Smp)
6. Vardavas et al	2009	GRE   URB	Questionnaire na	SR	12-18 y.	N=369	Health Topics Education; Information; Satisfaction	Health Information Source Stated Satisfaction
7. Schmidt et al	2010	Ger   SCH	GeKoKidS Questionnaire   17 Items	Mixed	9-13 y.	N=852	Conceptual Framework of Health Promotion Outcome Model (Physical Activities, Nutrition, Smoking, Vaccination, Tooth Health and General Health)	Knowledge, Attitude, Communication, Self-efficacy, Health Behaviour, Subjective Health (Parents)
8. Wu et al	2010	CN   SCH	Questionnaire   47 Items	PBA	8 <sup>th</sup> - 12 <sup>th</sup> Grade	N=275	Critical Health Literacy: Ability to comprehend and critically analyse Concept based on Heart Health	Understanding Evaluation / Critical Thinking
9. Yu et al	2012	CH   SCH	S.H.E.Q.   37 Items	SR	Elementary and Middle School	N=8008	Health Education Curriculum: Healthy Habits, Food and Nutrition, Diseases Prevention, Substance Abuse Prevention, Safety and Injury Prevention, Physical Activity, and Growth and Development	KAP LEVEL Knowledge Attitude Practice (Behaviour)
10. Chinn et al	2013	ENG   SCH	All Aspects of Health Literacy Scale (AAHLS) 14 Items	SR	15 - 82 y.	N=146	Nutbeams Typology: Functional, Communicative/Interactive, Critical	Reading, Writing, Access, Information gathering/processing skills/interactive, Appraisal, Evaluation, Capabilities for Empowerment
11. Wallmann et al	2012	Ger   SCH	Health Knowledge Quiz 49 Items	PBA	7 <sup>th</sup> Grade	N=699	Health Knowledge Concept: Nutrition, Prevention, Leisure Time, Body: Behaviour/Anatomy	Knowledge
12. Massey et al	2013	USA   HCS	Materials at 6th Grade reading Level   25 Items	SR	13-17 y.	N=1208	Expanded Model of Health Literacy based on Patient-provider Encounter; Health Information Seeking; Rights and Responsibilities; Interacting with the Health Care System	Knowledge, Attitudes Communication, Navigation, Confidence, self-efficacy, Information seeking
13. Röthlin et al	2013	AT   na	HLS-EU-Q 16 Items	SR	15 y.	N=571	Conceptual Framework: Disease Prevention, Health Promotion, Health Care	Access, Understand, Appraise, Apply
14. Driessnack et al	2014	USA   WP	NVS   6 Items	PBA	7-12y.	N=47	Functional Health Literacy	Reading Comprehension, Numeracy
15. Naigaga et al	2015	UG   HCS	s-MaHeLi Scale   12 Items	SR	15-19 y.	N=384	HLS-EU Model + Glanz 2002	Information Seeking, Critical Thinking / Evaluation Appraisal of health information, Competence and Coping Skills

SCH-School; HCS-Health Care Setting; LTS-Long Term Study; n.a.-not available; HEC-Health Education Centre; URB-Urban; SR=Self Report Measure; PBA=Performance Based / Objective Measure

### Identified Health Literacy Components



- N=15 unique instruments
- N=4 adaptations of adult tools for children
- N=11 use a broad model
- N=2 instruments use their own and specific definition
- N=5 Instruments in primary schools
- N=1 reporting on interviewing children before development
- Items varying from N=4 (Min.) to N=72 (Max.)

## ADAPTATION OF THE HLS-EU-Q: HLS-EU-Q KIDS SCALE

### Objectives and Methods

**Objective:** To review of HLS-EU-Q47 and HLS-EU-Q-16

**Methods:** Item per item analysis  
Screening of child related health surveys  
Screening of general child questionnaires  
Expert consultation  
Original developers  
Childhood experts  
Methodological experts  
Development of an assessment guide  
Development of childhood-specific items  
Content and context sensitive  
Literacy levels:  
comprehensibility, plain language  
reading/grammar, linguistic complexity

### Results from the adaptation process

	Items Adapted (Original Items)		
	Health Care	Disease Prevention	Health Promotion
Find	2 (4)	2 (4)	2 (5)
Understand	2 (4)	3 (3)	2 (4)
Appraise	2 (4)	2 (5)	2 (3)
Apply	2 (4)	2 (3)	2 (4)
Items in %	50%	60%	50%

**General Issues:**  
Children's ability to act and decide autonomously in health related context?  
Objective measure vs. self-report measure: Self-report might be an inadequate method to assess and reflect on the construct  
Case study vignettes / scenarios?

### Conclusion

Adaptation of HLS-EU-Q for kids is feasible, cognitive testing needed  
Some content modifications, e.g. reducing item complexity, matching child's daily life experiences  
Some methodological modifications: scenarios/vignettes, re-structuring