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Réseau Francophone de Littératie en Santé

Institut de Recherche en Santé Publique
GIS-IReSP

11h35

Adaptation française du questionnaire HLS-EU16

A. Rouquette

Rouquette A, Nadot T, Labitrie P, Van den Broucke S, Mancini J, Rigal L, Ringa V. (2018) Validity and measurement invariance across sex, age and education level of the European Health Literacy Survey Questionnaire short versions in French. *Plos One* 13(12): e0208091

CESP, INSERM, Université Paris-Sud, Villejuif, France
Université catholique de Louvain, Belgium
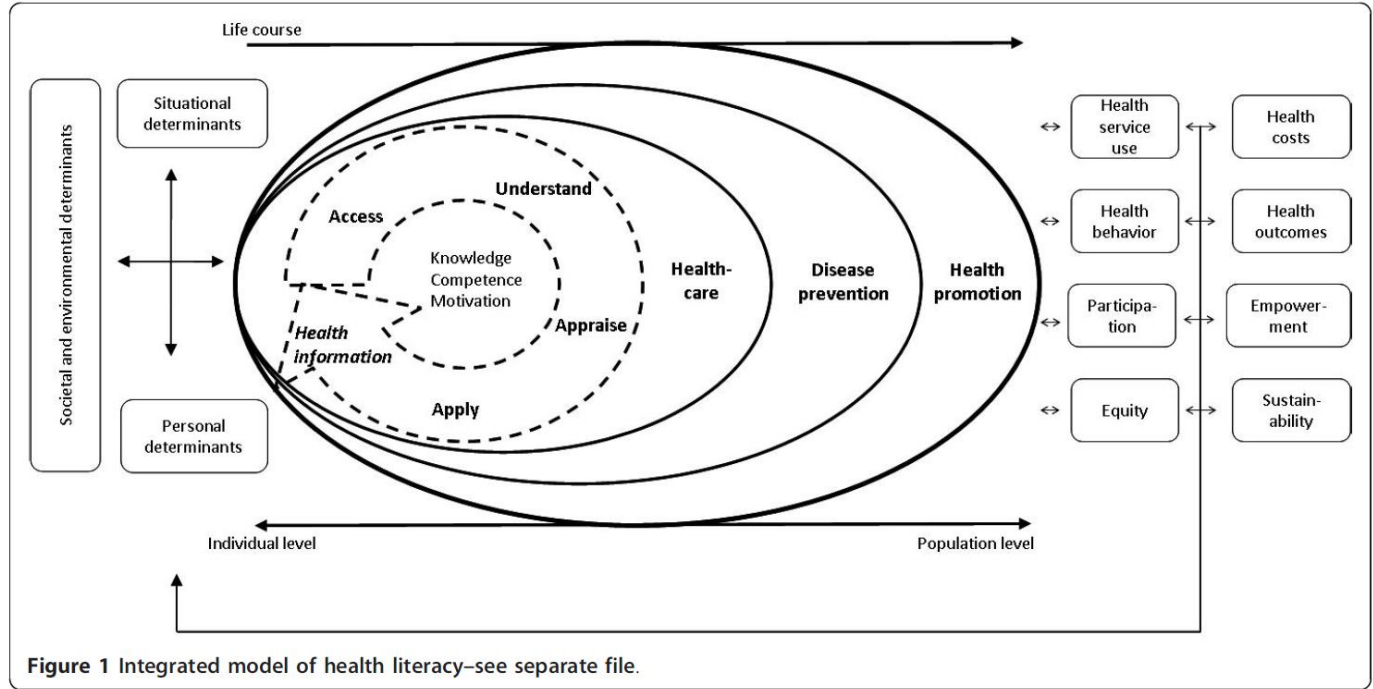SESSTIM, INSERM, Aix-Marseille Université, Marseille, France

Health Literacy Survey – European (HLS-EU) Consortium

Eight research teams

- ✓ Austria
- ✓ Bulgaria
- ✓ Germany
- ✓ Greece
- ✓ Ireland
- ✓ The Netherlands
- ✓ Poland
- ✓ Spain

Systematic review

- ✓ 17 definitions of HL
- ✓ 12 conceptual models

Figure 1 Integrated model of health literacy–see separate file.

Sorensen K, Van den Broucke S, Fullam J, *et al.* Health literacy and Public Health: a systematic review and integration of definitions and models. *BMC Public Health*, 2012, 12:80.

European Health Literacy Survey Questionnaire (HLS-EU-Q)

	Access/obtain information relevant to health	Understand information relevant to health	Process/appraise information relevant to health	Apply/use information relevant to health
Healthcare	Ability to access information on medical and clinical issues	Ability to understand medical information and derive meaning	Ability to interpret and evaluate medical information	Ability to make informed decisions on medical Issues
Disease prevention	Ability to access information on risk factors for health	Ability to understand information on risk factors and derive meaning	Ability to interpret and evaluate information on risk factors for health	Ability to make informed decisions on risk factors for health
Health promotion	Ability to update oneself on determinants of health in the social and physical environment	Ability to understand information on determinants of health in the social and physical environment and derive meaning	Ability to interpret and evaluate information on health determinants in the social and physical environment	Ability to make informed decisions on health determinants in the social and physical environment

Sorensen K, Van den Broucke S, Pelikan J, et al. Measuring health literacy in populations: illuminating the design and development process of the European Health Literacy Survey Questionnaire (HLS-EU-Q). *BMC Public Health*, 2013, 13:948.

European Health Literacy Survey Questionnaire (HLS-EU-Q)

Item generation

- ✓ 8 research teams
- ✓ **Delphi**
  measur

Face validity

- ✓ 3 universities (Greece , Ireland, the Netherlands)
- ✓ **Focus groups** (students and academic staff) to
  give fee
  of the fir

Field testing

- ✓ 2 countries (Ireland, the Netherlands)
- ✓ **99 face to face interview**
- ✓ Qualitative analysis: logb
- ✓ Quantitative analysis: iter
  analysis, Cronbach alpha

Construct validity

- ✓ **Experts consultation** in the field of
  health and H

Translation

- ✓ From the **English** version to **Bulgarian**, **Dutch**,
  German, **Greek**, **Polish** and **Spanish**

Sorensen K, Van den Broucke S, Pelikan J, et al. Measuring health literacy in populations: illuminating the design and development process of the European Health Literacy Survey Questionnaire (HLS-EU-Q). *BMC Public Health*, 2013, 13:948.

European Health Literacy Survey Questionnaire (HLS-EU-Q)

	Access/obtain information relevant to health	Understand information relevant to health	Process/appraise information relevant to health	Apply/use information relevant to health
Healthcare	4 items	4 items	4 items	4 items
Disease prevention	4 items	3 items	5 items	3 items
Health promotion	5 items	4 items	3 items	4 items

⇒ **47 items**

"On a scale from very easy to very difficult, how easy would you say it is to: …"
Answers on 4-point Likert scale: *"very easy"* (4), *"easy"* (3), *"difficult"* (2), *"very difficult"* (1)

✓ **1 comprehensive index:** standardized score 0-50
✓ **7 sub-indices:** standardized score 0-50
✓ **12 sub-sub-indices :** standardized score 0-5

4 HL levels (distribution based)
Inadequate (0-25), **Problematic (**26-33)
Sufficient (34-42), **Excellent (**43-50)

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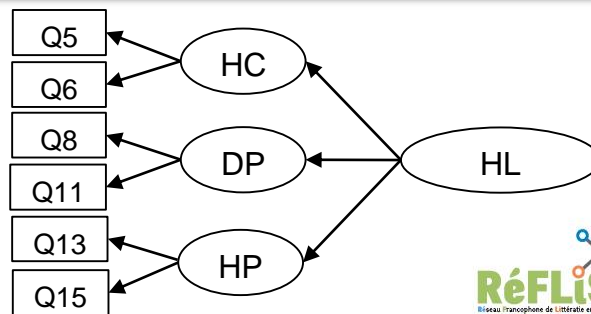Institut de Recherche en Santé Publique
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Short scales: HLS-EU-Q16 and HLS-EU-Q6

HLS-EU-Q16

➢ Rasch modelling, content and face validity

➢ **Dichotomization** of answer categories

  ➢ 0: 'difficult' & 'very difficult'

  ➢ 1: 'easy' & 'very easy'

➢ HL score 0-16: simple **sum score**

  ➢ Inadequate HL (0-8)

  ➢ problematic HL (9-12)

  ➢ sufficient HL (13-16)

HLS-EU-Q6

➢ Items from HLS-EU-Q16 with higher difficulty / HL domain + Confirmatory Factor Analysis

➢ **4-point Likert scale**

➢ HL score 1-4: **mean score**

  ➢ inadequate HL [1-2]

  ➢ problematic HL (2-3)

  ➢ sufficient HL [3-4]

HLS-EU-Q16

	Access/obtain information relevant to health	Understand information relevant to health	Process/appraise information relevant to health	Apply/use information relevant to health
Healthcare	**1 -** find information on treatments of illnesses that concern you? **2 -** find out where to get professional help when you are ill?	**3 -** understand what your doctor says to you? **4 -** understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?	**5 -** judge when you may need to get a second opinion from another doctor?	**6 -** use information the doctor gives you to make decisions about your illness? **7 -** follow instructions from your doctor or pharmacist ?
Disease prevention	**8 -** find information on how to manage mental health problems like stress or depression?	**9 -** understand health warnings about behaviour such as smoking. low physical activity and drinking too much? **10 -** understand why you need health screenings?	**11 -** judge if the information on health risks in the media is reliable?	**12 -** decide how you can protect yourself from illness based on information in the media?
Health promotion	**13 -** find out about activities that are good for your mental well-being?	**14 -** understand advice on health from family members or friends? **15 -** understand information in the media on how to get healthier?	**16 -** judge which everyday behaviour is related to your health?	

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HLS-EU-Q6

	Access/obtain information relevant to health	Understand information relevant to health	Process/appraise information relevant to health	Apply/use information relevant to health
Healthcare			**5 -** judge when you may need to get a second opinion from another doctor?	**6 -** use information the doctor gives you to make decisions about your illness?
Disease prevention	**8 -** find information on how to manage mental health problems like stress or depression?		**11 -** judge if the information on health risks in the media is reliable?	
Health promotion	**13 -** find out about activities that are good for your mental well-being?	**15 -** understand information in the media on how to get healthier?		

OBJECTIVE

HL measurement instrument → Population based cohorts ?

➢ **Functional Communicative Critical Health Literacy (FCCHL)**
  - 14 items, 3 dimensions (Ousseine *et al.* Valid French)
  - wording "If you are diagnosed…"

➢ **Health Literacy Questionnaire (HLQ)**
  - 44 items, 9 dimensions (Debussche *et al.* Valid French)
  - No short scale, copyright

OBJECTIVE

To **translate** the HLS-EU-Q16 (& Q6) into French and to evaluate their **psychometric properties**, including **measurement invariance** across sex, age, and education level.

METHODS (1)

Translation

➢Independent translation by 6 experts → consensual translation

➢Acceptability and comprehensiveness: 10 subjects → no modification

Psychometric properties

➢ 317 French-speaking patients ≥18years-old

➢ Waiting rooms of 17 GPs (various social backgrounds in the Paris area)

➢ **Patient questionnaire**

  ➢ socio-demographic (sex, age, and educational level)

  ➢ perceived health status and financial situation

  ➢ French versions of the HLS-EU-Q16 (& Q6) and FCCHL.

➢ **Physician questionnaire**

  ➢ "In your opinion, this patient's level of HL is: inadequate/medium/satisfactory?"

METHODS (3)

Statistical analyses

➢ **Structural validity and measurement invariance**

   ➢ HLS-EU-Q16: Rasch analysis (dichotomized items)

   ➢ HLS-EU-Q6: Confirmatory Factor Analysis (WLSMV)

➢ **Internal consistency :** Cronbach alpha coefficient

➢ **Concurrent validity**

   ➢ Spearman correlations : HLS-EU-Q16, HLS-EU-Q6 and three FCCHL subscores

   ➢ Kappa coefficient : agreement between HL levels defined by HLS-EU-Q16 and HLS-EU-Q6

➢ **Hypotheses testing:** Lower HL expected for

   ➢ less educated patients

   ➢ poor perceived health status

   ➢ poor perceived financial situation
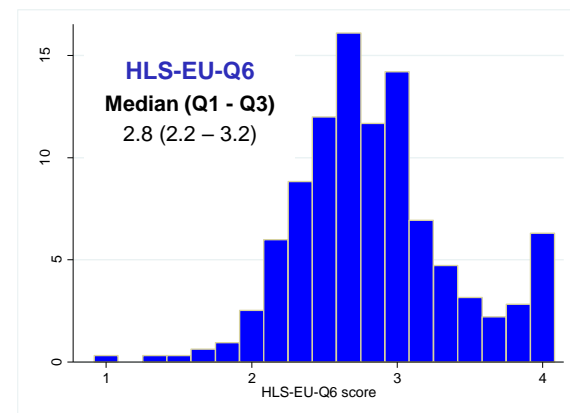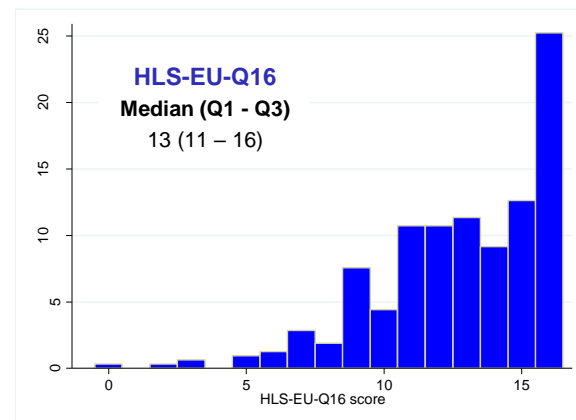
   ➢ low physician-assessed HL

RESULTS
Sample

Sample characteristics (N=317)
- ✓ Mean age: 53 (±18) years
- ✓ 207 (65%) women
- ✓ 188 (59%) post-secondary educational level
- ✓ 216 (68%) financial situation: « very / relatively confortable »
- ✓ 208 (66%) perceived health status: « good to excellent »

HLS-EU-Q16
Median (Q1 - Q3)
13 (11 – 16)

HLS-EU-Q6
Median (Q1 - Q3)
2.8 (2.2 – 3.2)

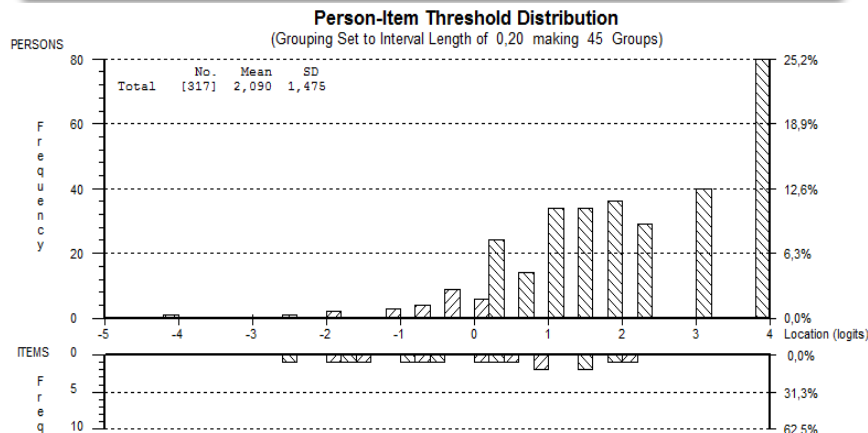|	HLS-EU-Q16 N=317	HLS-EU-Q6 N=317	HL - physician N=286
Inadequate	26 (8%)	16 (5%)	26 (9%)
Problematic	106 (33%)	218 (69%)	81 (28%)
Adequate	185 (58%)	83 (26%)	179 (63%)

RESULTS
Structural validity - HLS-EU-Q16

Rasch homogenous
- Good overall fit (Chi² p-value=0.08)
- Good fit at the item level (standardized residuals <|2.5| and Chi² p-values>0.05**)**

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0,20 making 45 Groups)

	No.	Mean	SD
Total	[317]	2,090	1,475

Differential Item Functioning (DIF)

SEX

Item 1 - finding information on treatments on illnesses that concern you

AGE

Item 3 - understanding what your doctor says to you

Item 5 - judging when you may need to get a second opinion

Item 14 - understand advice on health from family members or friends

EDUCATIONAL LEVEL

Item 1 - finding information on treatments of illnesses that concern you

Item 6 - using information the doctor gives you to make decisions

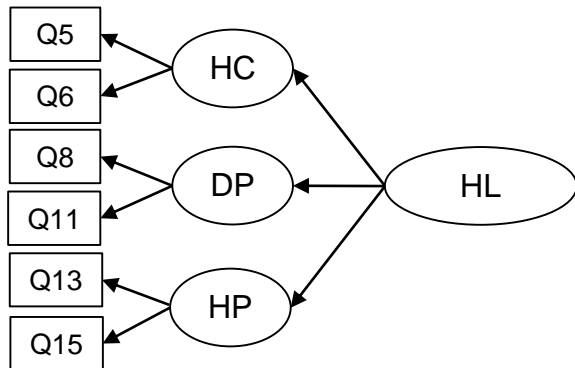**Item 11** - judging if the information on health risks in the media is reliable

Item 12 - deciding how you can protect yourself from illness based on information in the media

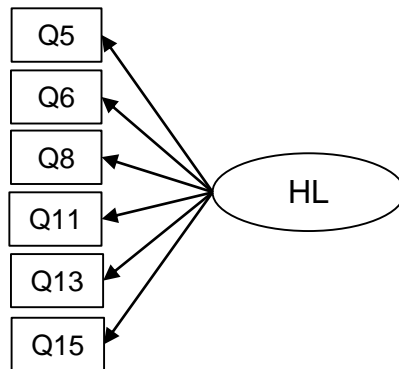**Item 16** - judge which everyday behavior is related to your health?

RESULTS
Structural validity - HLS-EU-Q6

Confirmatory Factor Analysis (WLSMV)

Fit of the two-order factor model
Computational issues (« non-positive informative matrix »)

Fit of the one-factor model
Not satisfactory (CFI=0.948, TLI=0.913, RMSEA=0.176)

RESULTS
Internal consistency and concurrent validity

Internal consistency

- ✓ HLS-EU-Q16: **Cronbach alpha = 0.81**
- ✓ HLS-EU-Q6: **Cronbach alpha = 0.83**

Concurrent validity

- ✓ Spearman correlation coefficients : **all significant**

	HLS-EU-Q16	HLS-EU-Q6
HLS-EU-Q6	**0.88**	**1**
FCCHL-1	**0.25**	**0.25**
FCCHL-2	**0.29**	**0.30**
FCCHL-3	**0.12**	**0.06**

- ✓ Agreement between HL levels defined by HLS-EU-Q16 and HLS-EU-Q6

  → **Kappa = 0.36**

RESULTS
Hypotheses testing

Table 2. Distribution of the scores on European Health Literacy Survey Questionnaire with 16 items (HLS-EU-Q16) and with 6 items (HLS-EU-Q6) in the overall sample and according to physician's evaluation of patient health literacy (HL), education level, perceived health status, and perceived financial situation.

	N	HLS-EU-Q16			HLS-EU-Q6		
		Mean (SD)	Median (Q1 –Q3)	p-value	Mean (SD)	Median (Q1 –Q3)	p-value
Total	317	12.8 (3.0)	13 (11–16)		2.8 (0.5)	2.8 (2.2–3.2)	
Patient HL evaluated by the physician							
Inadequate	26	10.3 (4.5)	11 (8–14)	0.002	2.6 (0.6)	2.7 (2.3–3)	0.033
Medium	81	12.5 (2.9)	13 (10–15)		2.8 (0.5)	2.8 (2.3–3)	
Satisfactory	179	13.2 (2.8)	14 (11–16)		2.9 (0.5)	2.8 (2.5–3.2)	
Education							
Primary	73	12.3 (3.6)	13 (11–15)	0.480	2.8 (0.6)	2.8 (2.5–3)	0.753
Secondary	55	13.2 (2.5)	14 (12–15)		2.9 (0.5)	2.8 (2.7–3.2)	
Post-secondary	188	12.8 (2.9)	13 (11–16)		2.8 (0.5)	2.8 (2.5–3.1)	
Perceived health status							
Excellent, very good	78	13.4 (2.6)	14 (12–16)	0.073	2.9 (0.5)	2.8 (2.5–3.2)	0.539
Good	130	12.9 (2.5)	13 (11–15)		2.8 (0.5)	2.7 (2.5–3)	
Not bad, mediocre	107	12.1 (3.7)	13 (9–15)		2.8 (0.6)	2.8 (2.3–3.2)	
Perceived financial situation							
Very comfortable	32	13.7 (2.7)	15 (11.5–16)	0.031	3.2 (0.6)	3 (2.7–3.8)	0.017
Relatively comfortable	184	13.0 (2.9)	13 (11–16)		2.8 (0.5)	2.8 (2.5–3.1)	
Just about managing	85	12.3 (3.2)	13 (11–15)		2.7 (0.5)	2.7 (2.3–3)	
Not really managing/not managing	15	11.1 (4.0)	11 (8–15)		2.8 (0.8)	2.8 (2.2–3.2)	

CONCLUSION

French version of the HLS-EU-Q16

- ✓ Acceptable psychometric properties

- ✓ Precautions

  - Preferably **to discriminate between subjects with low to average health literacy** (ceiling effect)

  - **Sensitivity analyses** to evaluate the impact of the presence of **differential item functioning**

French version of the HLS-EU-Q6

- ✓ Validity could not be established

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