

smiles



Baseline study part 3

Instruments for the measurement of COVID-19
media and information literacy (MIL)

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1 Intro

The aim of part 3 is the development of basic instruments to measure respondent resilience to disinformation. Cases and examples of disinformation that will be used in the instruments will be taken from a COVID-19 context when applicable. People who are resilient to COVID-19 disinformation are supposed to be 'media or information literate'. Therefore, the construct that is aimed to be measured with the instruments is Media and Information Literacy, abbreviated as MIL.

Instruments that will be developed must be adaptable for different target groups (pupils, library staff and teachers). The basic instruments will therefore contain for instance scales that can be modified to measure the effectiveness of the train-the-trainer workshops as well as that of fake news workshops in secondary education. Final instruments will be used in the IO3 phase to make recommendations for improvement. Analyses of results of those final assessments will be performed for each country separately.

Because the basic instruments that will be developed in output 1 are intended to be used as pre- and post-tests in output 2, the focus will be on the impact of the interventions. For evaluating the processes during the interventions and the participant experiences, extra instruments should be developed.

2 Desk research

THUAS initially performed desk research on existing instruments for assessing media and information literacy in a broader sense because measuring the ability to resist disinformation on COVID-19 is supposed to be too recent a topic to be represented in scholarly literature. But because 'media literacy' and 'information literacy' are themselves supposed to be rather broad topics, the phrases 'news literacy' or 'news media literacy' were used as keywords for the queries, assuming that much disinformation on COVID-19 is presented as 'news'. Both phrases 'news literacy' and 'news media literacy' are used interchangeably in the literature. Resources used to find relevant documents for assessing news (media) literacy included the Proquest databases LISA (for Library & Information Science) and ERIC (for Educational

Keyword matrix to find relevant documents		
← AND →		
↑	"news media literacy"	assess*
	"news literacy"	measure*
OR		"programme effectiveness"
↓		"educational evaluation"

documents).

Keywords for the second concept of the query (assessment) are selected based on an analysis of the first key publication that was found on the topic of 'news literacy assessment' (Maksl, Ashley & Craft, 2015). Though the keywords for the first concept were limited to 'news (media) literacy', the topic of information literacy on COVID-19 was indeed still part of the scope of the research because not all disinformation should be characterised as 'news'. Sources for information on COVID-19 are subsequently interpreted as mainstream media as well as social media and internet applications. An extension of the query with alternative keywords (like 'disinformation NEAR vulnerable' or 'false news NEAR resilience') did not result in extra relevant documents.

With the keywords from table 1, we found 7 relevant documents in the forenamed Proquest databases (date of retrieval 24 March 2021). This set of relevant documents is completed with documents found by checking references and citations (forward and backward chaining). A total of 23 documents were used for content analysis on assessment instruments and assessment topics (see bibliography).

3 Theoretical framework

Among others, the above-mentioned researchers, Ashley, Maksl and Craft, published various studies in which they created and tested news media literacy scales based merely on Potter's 2004 media literacy scale and adapted to news media specifically (for instance Maksl, Ashley and Craft, 2015). Based on those models by Potter and Maksl et al. we distinguish between four main components or 'dimensions' that we want to measure with the COVID-19 media and information literacy assessments:

- knowledge and understanding of how media are organised, their content and effects
- a personal media locus of control: the extent to which an individual believes they control media influences (Maksl et al., 2015)
- skills: access, content analysis, evaluation and communication skills
- information processing tasks: forming opinions, making decisions and problem-solving.

This distinction of four major dimensions from Potter and Maksl's models is applied as a framework for analysing the documents that we found on assessment instruments. In other words, we made a distinction between the measurement of knowledge, a personal locus of control, skills and the measurement of task performance, while acknowledging that those dimensions might be connected in more than one direction.

4 Results of desk research

Based on the retrieved documents, we distinguish three different types of assessment instruments:

- surveys or 'scales';
- skills assessments, mainly related to analysis and evaluation skills; and
- performance-based ('whole task') assessments.

Surveys are mainly related to both knowledge as a personal locus of control, skills assessment of course with skills and performance-based assessments with information processing tasks. In the rest of this section, we will elaborate on these three different types of assessments.

4.1 Surveys or 'scales'

Questions or statements with rating scales are without a doubt the most often mentioned types of assessment tools for news media literacy. The most frequently discussed scales to measure news literacy are surveys by Ashley, Maksl and Craft (2013) and those by Maksl, Ashley and Craft (2015). Later examples of news media literacy scales are mainly based on and built according to these scales (Vraga et al, 2015; Murrock et al, 2018; Geers, Boukes and Moeller, 2020). Because of their wide applicability and proven validity, we suggest using the scales by Maksl, Ashley and Craft as a model to measure knowledge about media and perceived control over media while adapting their examples to news and information in the context of COVID-19. Section 5 of this report features the development of such scales focused on knowledge (with subdimensions for knowledge of media organisations, media effects and types of content) and the personal media locus of control. Inspiration for the formulation of scale items was found in the aforementioned example surveys.

4.2 Skills assessments

Unlike knowledge surveys or questionnaires, a skills assessment attempts to determine how good someone is at performing a specific task. Examples of skills assessments that were found in the literature were all related to questions about reliable and less reliable information (Horn and Veermans, 2018; Murrock et al, 2018; Roozenbeek and Van der Linden, 2019). They refer, in other words, to content analysis and evaluation skills. Critical thinking ability is often mentioned as a prerequisite for evaluation skills (Hobbs, 2017; Paisana, Pinto-Martinho & Cardoso, 2020). Examples of evaluation tasks are cases where a respondent is asked to answer how reliable a given information source is on a Likert scale or compare the reliability of two different information sources. Simple evaluation tasks can be combined with scale items like the ones in 4.1 in one survey. The scales development that will be reported in section 5 of this report will be expanded with a scale for the measurement of such evaluation skills.

Examples of skills assessments with regard to 'access' have not been found. Most of the literature describes the design of assessments for adolescents or young adults (college age students) and an explanation for the absence of the subject of 'access' may be that it is assumed that those younger groups do not have trouble with this.

Given the variety of our target groups, we should keep in mind that the subject of access to tools and apps might be an issue for library staff and teachers. Communication skills were also out of the scope of the literature that we studied but these might also be incorporated in performance-based whole task assessments.

4.3 Performance-based assessments

Media and information literacy is, as we stated in the theoretical framework, a multi-dimensional construct. Surveys and skills assessments, as previously discussed, are mostly related to only one or two dimensions. That's why some authors who write about digital and media literacy assessments consider performance-based measurements as the 'gold standard' when measuring media or information literacy competencies (Hobbs, 2017, p. 258). Those performance-based assessments relate to 'whole tasks' that are highly similar to everyday practices (also named 'authentic assignments'). In our framework – a modification of Potter's media literacy model – forming opinions, making decisions and solving problems can be regarded as authentic assignment tasks. However, it is hard to observe pupils in processing those information tasks in real life. That's why such authentic tasks are often used at universities and colleges as school assignments. In secondary education, you will also find them as an assignment to prepare a presentation or paper. An additional advantage for these types of assignments is that they are the only assessment types that include a measurement of communication skills as part of media and information literacy.

For assessing such authentic assignment tasks, the preference is to use so-called 'scoring rubrics'. These rubrics describe "criteria for rating important dimensions of performance, as well as standards of attainment for those criteria" (Jonsson and Svingby, 2007). Researchers at THUAS have extensive experience in developing and testing rubrics for information literacy (see for instance Van Helvoort et al, 2017). In the context of COVID-19 media and information literacy, it could be useful to give pupils a school assignment to prepare a presentation or paper related to COVID-19 issues. In that case, it would be wise to use a scoring rubric to assess the qualities of the student products that they deliver and the learning processes they have gone through.

5 Basic instruments

Although it has not yet been decided exactly what type of intervention will be developed in IO2, we assume that it will involve a one-off intervention and not an ongoing longitudinal activity. This makes a performance-based assessment less suitable for the SMILES project. The same applies to communication skills.

Assessment of skills to access specific applications or media does not seem to apply to the 12–15 age group and is therefore not recommended to be included in the basic instrument.

Considering all these arguments, we have chosen to create basic rating scales for five separate dimensions:

- knowledge and understanding of how media are organised (kmo);
- knowledge and understanding of media content types (kmc);
- knowledge and understanding of media effects (kme);
- personal media locus of control (loc);
- content analysis and evaluation skills (sk).

Because our instrument is supposed to be used for a pre- and post-test, we are more interested in observed knowledge and skills than in the way respondents experience their own knowledge and skills (see Poll 2012 for the difference between observed and solicited evidence). We drafted a survey with five dichotomous items for each dimension (25 items), and four items referring to independent variables (gender, age, type of school/education and the language respondents speak at home). The items referring to the dependent variables were all of the type true/false or agree/disagree with an extra option 'I don't know' for both types.

This draft of the survey was initially reviewed by colleagues from The Hague University of Applied Sciences, participants of the SMILES project and by a researcher from Universitat Pompeu Fabra Barcelona, Mittzy Arciniega, who is involved with Edumediatest, another media literacy assessment project funded by the European Commission. Finally, the draft survey for SMILES was conducted in Dutch among 97 Bachelor ICT students at The Hague University of Applied Sciences (87 males, 8 females, 2 other).

The results were analysed with the procedure reliability analysis in SPSS. Three iterations of the procedure were performed to keep only survey items with sufficient item-total correlations (figure 1). The total of deleted items was 10. Fifteen items remained in the basic survey with a Cronbach's Alpha = .792. The complete basic survey can be found as appendix 1.

Considering the age of the respondents in this test and their current education (a bachelor course at a university of applied science), it is suggested that this version is suitable to use for train-the-trainer sessions as a pre- and post-test. For secondary school workshops, the items should be reformulated to better match the cognitive level and language use of the pupils, and should be tested again with the right target group.

Figure 1: Results of SPSS reliability analysis

First iteration

N of items 25

Cronbach's Alpha .750

Items were deleted if Corrected Item-Total Correlation < .300 and Cronbach's Alpha If Item Deleted > .750: kmo1, kmo2, kmc1, loc1 and loc2 are deleted.

Second iteration

N of items 20

Cronbach's Alpha .763

Items were deleted if Corrected Item-Total Correlation < .300 and Cronbach's Alpha If Item Deleted > .763: kmc3, kmc5, loc3 and loc 5 are deleted.

Third iteration

N of items 16

Cronbach's Alpha .789

Items were deleted if Corrected Item-Total Correlation < .300 and Cronbach's Alpha If Item Deleted > .789: kmo 5 is deleted.

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Appendix 1: Basic rating scales to measure COVID-19 Media and Information Literacy

SMILES Media and Information Literacy Scales (English)

This survey has been developed as part of the SMILES disinformation project and the workshops in which you are participating. It consists of some introductory questions and 15 statements. Please be honest when responding to the statements and questions. Your answers will be processed anonymously. The purpose of the survey is only to measure the effectiveness of the workshops.

We expect it will take you about 5 minutes to complete

* Required

1	Informed consent*			
	0	I've read the information about the survey and I agree with the terms it contains regarding my participation.		
2	I am			
	0	a 'he'		
	0	a 'she'		
	0	other		
3	What is your age?			
	0	12-14	0	15-17
	0	18-20	0	21-25
	0	26-30	0	31-40
	0	41-50	0	51-60
	0	61-70	0	71-80
4	What kind of school are you currently in?			
	0	secondary school		
	0	college		
	0	university bachelor		
	0	university master		
	0	other		
	0	none		
5	Which languages do you speak at home? (Multiple answers allowed)			
	0	Dutch		
	0	French		
	0	English		
	0	Spanish		
	0	Turkish		
	0	Arabic		
	0	Other		

6	Indicate whether you think that the statements below are true or false, or that you do not know*			
		True	False	I don't know
kmo3	People who share messages about COVID-19 on Twitter normally do extensive research first. (reverse coded)	0	0	0
kmc2	Some stories on social media intend to harm other people, for instance politicians.	0	0	0
kmc4	Photos on Snapchat are always safe as they will be deleted after 10 seconds. (reverse coded)	0	0	0
kme2	I believe that when a Tweet (a post on Twitter) is retweeted often, it should be reliable. (reverse coded)	0	0	0
kme3	I believe that on social media, negative news about COVID-19 gets more attention than positive news.	0	0	0
loc4	I know how to turn off 'notifications' on my smart phone or tablet.	0	0	0
kmo4	Journalists help Facebook to fact check posts about COVID-19 but not all posts can be checked.	0	0	0

7	For the statements below, indicate whether you agree with them or not, or whether you do not know*			
		Agree	Disagree	I don't know
kme1	Anyone who is a subject of a Twitter storm (a sudden large increase in the number of negative tweets about her/himself) is her/himself to blame. (reverse coded)	0	0	0
kme4	Two people who see the same news item about COVID-19, can each take different information from it.	0	0	0
kme5	Most information that people find about COVID-19 on social media reinforces the meaning that they already have.	0	0	0
sk1	The message in this video from Youtube is reliable https://youtu.be/GT3pcfmNdX4 . (reverse coded)	0	0	0
sk2	https://covid-19.com/ is a reliable website in which to get information about COVID-19. (reverse coded)	0	0	0
sk3	This information about COVID-19 is reliable. https://www.rtlnieuws.nl/entertainment/royalty/artikel/5113131/gezin-prins-laurent-getroffen-door-coronavirus .	0	0	0
sk4	This infographic contains reliable information about COVID-19 and water. https://d2k0ddhflgrk1i.cloudfront.net/Websections/Global%20Drinking%20Water/COVID-19%20in%20water.jpeg	0	0	0
sk5	The information about COVID-19 in this video can be trusted. https://fb.watch/4Gxhe_eQra/ (reverse coded)	0	0	0
	Submit			

Notes:

- item sk3 should be replaced in the survey for Spain and may be also for the survey in Belgium because rtl.nieuws is not a commonly known broadcast company in those countries
- the case in item sk4 is also available in Spanish language.