

Forthcoming in:

Huotari, M.-L. (in press). Cognitive authority and health information literacy. In A.-K. Mayer (Ed.), Health literacy across the life span. Lengerich: Pabst Science Publishers.

Maija-Leena Huotari¹

Cognitive authority and health information literacy

Abstract

The aim of this study is to explore whether the notion of cognitive authority by Wilson (1983) has the potential to increase the understanding of health information literacy in the context of everyday life. The qualitative research method is based on a socio-cultural perspective and elaborates further the results of two comparative studies among people living in a North-European country and a West-African country. In these studies an everyday health information literacy (EHIL) screening tool was utilised to indicate differences among groups of people. The exploration shows that the concept of cognitive authority with its sub-concepts has some explanatory potential, which should be examined further in future studies.

¹ P.O.Box 1000, FI-90014 University of Oulu, Finland.
Email: Maija-Leena.Huotari@oulu.fi

Introduction and aim of the study

Health is an important value in contemporary society. The competence to maintain good physical, mental and social health is related to a person's wellbeing in life. However, this is not self-evident for everyone. For example, obesity and overweight are an increasing health problem world-wide. Besides Western countries, these problems also affect low- and middle-income countries, which, according to the World Health Organization (WHO, 2016) are confronted with a “double burden” while simultaneously dealing with the problems of infectious diseases and undernutrition, as well as obesity and overweight, especially in urban environment. WHO (2016) states that “it is not uncommon to find undernutrition and obesity co-existing within the same country, the same community and the same household.”

Research indicates that there are a number of issues that may have an association with an individual's health status. Many of these relate to the way of carrying out daily routines: nutrition and eating habits, physical and social activities, and sleep, in particular.

Furthermore, an individual's health promoting behaviour is associated with his or her level of education (Lahelma, Martikainen, Laaksonen, & Aittomaki, 2004).

In information studies, we are interested in people's competence and their way of dealing with information, that is, their information behaviour (IB) and information literacy (IL). Studies indicate that health information literacy has a positive association with people's health behaviour (see e. g. Hirvonen, Ek, Niemelä, Pyky, Ahola, Korpelainen, & Huotari, 2016). Accordingly, health information literacy (HIL) is often understood as information literacy (IL) in the context of health. HIL is vital for people to navigate in contemporary, dynamic, and increasingly digital information environments. The dynamics add opportunities to encounter and find more irrelevant information than in “traditional” information environments. Therefore, it is not easy to determine who or what to believe and trust in health issues (Niemelä, Ek, Eriksson-Backa, & Huotari, 2012). In other words, it is not easy to know who or what *cognitive authorities* are in health. The aim of this study is to explore whether the notion of cognitive authority has the potential to increase the understanding of health information literacy in the social context of everyday life. In this investigation, the results of two comparative studies among people living in a North-European country and a West-African country are elaborated further.

Theoretical background

The point of departure for this explorative study is twofold. First, a firm background is provided by a number of previous studies related to HIL and its assessment with a screening tool in everyday life contexts. The everyday health information literacy (EHIL) screening tool was introduced as part of the sub-project *Utilization of Health Information Management and Modern Technology in the Prevention of Obesity* of the PrevMetSyn consortium funded by the Academy of Finland in 2010 to 2012. The tool was piloted among Finnish high-school students in 2011 (Niemi et al., 2012), and further used in studying the health information literacy of young Finnish men (Hirvonen, 2015; Hirvonen, Ek et al., 2016; Hirvonen, Enwald et al., 2016). It was also utilized in the consortium's intervention study on lifestyle counselling, in which the target population were Finnish people in a risk-group for metabolic syndrome, which may lead to diabetes type two (Huotari, Enwald, Hirvonen, Keränen, Jokelainen, Salonurmi, & Niemi, 2015).

Second, this study is based on the concept of cognitive authority. This is the main concept of a new project called *Cognitive Authorities in Everyday Health Information Environments of Young People (CogAHealth)*, which is an Academy of Finland funded project at the University of Oulu from 2016 to 2020. In the CogAHealth project, robust theoretical and empirical work will be carried out to examine how cognitive authorities are constructed among young people (10–24-year-olds, UNDESA 2017) when they participate in formal, informal and non-formal health information environments. School provides formal health education for young people, who also learn in informal environments, for example at home, and non-formally in less formal though goal-directed leisure activities such as the Scouts and non-credit adult education courses.

The concept of EHIL and the factorial structure of the screening tool

In the studies concerning the testing of the EHIL screening tool, HIL was defined by applying the Medical Library Association's definition:

“the set of abilities to recognize a health information need, identify likely information sources and use them to retrieve relevant

information, assess the quality of the information and its applicability to a specific situation, and analyse, understand, and use the information to make good health decisions.” (Shipman, Kurtz-Rossi & Funk 2009, p. 294).

HIL is a concept related to health literacy (HL), but allows placing the emphasis more specifically on issues related to people’s information competencies.

The EHIL screening tool by Niemelä et al. (2012) consists of ten statements, with response options from 1 (strongly disagree) to 5 (strongly agree), as follows:

1. It is important to be informed about health issues.
2. I know where to seek health information.
3. I like to get health information from a variety of sources.
4. It is difficult to find health information from printed sources (magazines and books).
5. It is difficult to find health information from the Internet.
6. It is easy to assess the reliability of health information in printed sources (magazines and books).
7. It is easy to assess the health information on the Internet.
8. Health related terminology and statements are often difficult to understand.
9. I apply health related information to my own life and/or that of people close to me.
10. It is difficult to know who to believe in health issues.

Recently, a comparative study was conducted with the aim to identify possible cultural differences on EHIL among Finnish high school students ($n = 217$) and Namibian university students ($n = 271$). The mean values of the EHIL sum variable, calculated from the above mentioned statements, indicated no differences between these two samples. However, when the statements were compared individually, statistically significant differences were identified related to each statement.

Already in piloting the screening tool, the EHIL statements were grouped, through a factor analysis, into three factors, namely motivation, evaluation and confidence (Niemelä et al., 2012). To further validate the factorial structure of the tool, a comparative study was conducted with data from three populations: Finnish young men ($n = 1,481$), Finnish adult

individuals with a high risk of metabolic syndrome ($n = 571$) and Namibian university students ($n = 271$). The exploratory factor analysis confirmed the screening tool's robustness in the factors Motivation (EHILs 1, 3, 2, 9) and Evaluation (EHILs 7, 6). However, in the Namibian sample, a four-factor structure was found. The factors were otherwise similar, but in the Namibian sample, the factor Confidence was divided into two separate facets: confidence in individuals' ability to understand or interpret health information (EHILs 8, 10) and confidence in finding or accessing information (EHILs 4, 5) (Hirvonen, Enwald, Nengomasha, Abankwah, Uutoni, Korpelainen, Pyky, Huotari, & Mayer, 2016). The factorial structure with the statements is displayed below in Figure 1.

MOTIVATION

EHIL1. It is important to be informed about health issues.

EHIL3. I like to get health information from a variety of sources.

EHIL2. I know where to seek health information.

EHIL9. I apply health related information to my own life and/or that of people close to me.

EVALUATION

EHIL7. It is easy to assess the reliability of health information on the Internet.

EHIL6. It is easy to assess the reliability of health information in printed sources (magazines and books).

CONFIDENCE

EHIL10. It is difficult to know who to believe in health issues.

*EHIL8. Health related terminology and statements are often difficult to understand.

EHIL5. It is difficult to find health information from the Internet.

EHIL4. It is difficult to find health information from printed sources (magazines and books).

*This statement was not included in the first factor analysis by Niemelä *et al.* (2012). However, it was included in the factor analysis by Hirvonen *et al.* (2016).

Figure 1. The factorial structure of the EHIL screening tool (adjusted from Hirvonen *et al.*, 2016).

Similarly to the findings of the study by Huotari *et al.* (2015), it can be assumed that the results of the study by Hirvonen *et al.* (2016) relate to cultural differences between a North-European country and a West-African country. According to our interpretation, these differences were partly explained by the health information environments of Namibian and Finnish students, more specifically, the nature of the reading culture that is lacking due to

the strong oral and narrative or story telling culture, as well as the underdeveloped health information infrastructure in Namibia (Huotari et al., 2016).

The concept of cognitive authority

The concept *cognitive authority* was introduced by Patrick Wilson in the early 1980s. It refers to second hand knowledge, when first-hand knowledge refers to one's own knowing based on one's own experience. Its closest synonym is *epistemic authority*, and it is related to the concept of social epistemology. The focus of interest is in what cognitive authority is, on what grounds people notice it and give credit to it (Wilson, 1983).

The essential characteristic of the concept of cognitive authority is that it is based on influence rather than position (as administrative authority is). In other words, individuals' cognitive authorities influence their way of thinking. Cognitive authority is related to credibility, that is, something that is worthy of believing, which can be further divided into competence and trustworthiness. Trustworthiness may refer to common competence based on one's own experience, and it is further related to honesty and prudence or caution (Wilson, 1983).

According to Wilson, we turn to cognitive authorities both for information and advice. Therefore, cognitive authorities are evaluated on the basis of an individual's information need and the context in which the information will be used. Moreover, it must be noted that communities may recognize different types of cognitive authority. This means that cognitive authority is contextual and constructed (Association of College and Research Libraries, ACRL, 2015; see also e. g. Doty, 2015; Huvila, 2013 and Savolainen, 2007).

In summary, it can be stated that we can trust our own experience as well as information and advice provided to us. The provider of the information and advice we perceive as credible is a cognitive authority for us within the sphere where our information need came about.

Performance and successful accomplishment are, among other things, criteria used to judge cognitive authority. Although these also relate to expertise, it must be noted that expertise is not a synonym for authority. In addition to these aspects, personal trust in a person may refer to cognitive authority. This type of cognitive authority relates to, for example, charismatic authority in religion, politics or science (Weber, cited in Wilson, 1983, p. 25).

Furthermore, Wilson states that books, journals and institutions have cognitive authority

which is based on the personal authority of the author of the text, institutional authority of the publisher, authoritativeness of the type of text and the intrinsic plausibility of the claims made in the text.

In the CogAHealth project, we are interested in issues related to cognitive authority. The foci of our study are who or what the cognitive authorities are of young people in the context of health information, and how cognitive authorities are constructed. Young people make an interesting research population because health behaviours are adopted at a young age and often last a lifetime (Pitel et al., 2013). In adolescence people also learn the competences that enable them to manage their own lives and make choices that influence their health.

Multidisciplinary background for the CogAHealth project

There are a number of previous projects on literacies and new literacies (Lankshear & Knobel, 2011) which provide a multidisciplinary foundation for the CogAHealth project and its sub-studies. The *Joy of Reading* programme aimed at developing comprehensive reading skills for children and young people, boys in particular, and promoting motivation to read through cooperation between schools, libraries and homes (see Suorsa & Huotari, 2014). It was conducted by the Faculty of Humanities and the Faculty of Education at the University of Oulu, and funded by the Finnish Ministry of Education and Culture in 2012 to 2015. Moreover, the programme focused on multiliteracy and the use of new technologies which supported developing new curricula (the national curriculum in force from 2016) and library strategies.

In this multidisciplinary context, the *Future School Research Second Wave* project should also be acknowledged. It was conducted by the Faculty of Education at the University of Oulu, and funded by the European Social Fund from 2011 to 2013. The project aimed at promoting 21st century skills (Voogt & Pareja, 2010) by employing technology pedagogically to promote functional and exploratory teaching. To achieve this, the so-called *off-the-school-desk* approach was implemented to allow children to learn with and from their peers in formal, informal and non-formal environments around the clock, on a 24/7 basis (see Palmgren-Neuvonen, 2016; see also Räisänen, 2015).

Furthermore, the *Health Information Practice and its Impact (HeIP)* project has increased the understanding of the topical area of CogAHealth. This project was conducted together with Åbo Akademi University and funded by the Academy of Finland from 2008 to 2012. In this project childhood obesity care, for example, was examined by focusing on the creation of patient value for obese children and their families in Finnish health care practice (Känsäkoski, 2014; Känsäkoski & Huotari, 2016; Känsäkoski, 2017).

Method

The research method of this study is a qualitative, explorative examination based on a socio-cultural perspective. The research question is stated as follows: Does the concept of cognitive authority (Wilson, 1983) have the potential to explain the two facets of the Confidence factor of the EHIL screening tool as indicated by the validating study by Hirvonen et al. (2016)?

Results

As already outlined in this article, the concept of cognitive authority (Wilson, 1983) enables us to dig deeper into a phenomenon related to people's way of assessing the content of information they find on purpose as a result of a search process or encounter, for example, when browsing the world-wide web. As an umbrella concept for a number of sub-concepts related to the credibility and influence of information content, the notion of cognitive authority may support our analysis of the Confidence factor of the EHIL screening tool. Consequently, we may argue that the difference indicated by Hirvonen et al. (2016) in the Confidence factor may be interpreted by utilizing the concept of cognitive authority in a health information context when the cultural environment differs. This view is supported by Wilson (1983) who states that in an expert's competence "the authority is one who knows about the status of questions within his sphere" (p.17) and that "[t]he sphere is well-defined, the difference between a specialist and a generalist is between well-defined spheres of authority" (p.19).

In the Namibian sample, the first facet related to confidence is a person's own degree of competence in finding health information from printed sources [EHIL4: "It is difficult to find health information from printed sources (magazines and books.)"] and from the Internet

(EHIL5: “It is difficult to find health information from the Internet.”). In other words, the facet refers to self-confidence. In the comparative study by Huotari et al. (2015) confidence was lower among the Namibian university students than among the Finnish comparable sample regarding searching for information from printed sources and also concerning retrieving health information from the Internet.

We may argue that the reasons for the perceived challenges among Namibian university students in finding health information relate to a lack of printed sources due to the poor provision of health information, for example, in schools and for lay people in public libraries (see Huotari et al., 2015). Another reason may also be poor access to the Internet in schools as well as a general critical attitude towards the Internet as a reliable source of health information as stated by Nengomasha, Uutoni and Yule (cited in Huotari et al., 2016). Both of these possible reasons related to self-confidence may refer to missing experience, which may indicate a lack of first-hand knowledge on finding health information. In this kind of situation one has to use other sources to gain second-hand knowledge.

The second facet was related to confidence in who to believe concerning health issues (EHIL10: “It is difficult to know who to believe in health issues.”) and in one’s own ability to understand terms as well as sentences of health information (EHIL8: “Health related terminology and statements are often difficult to understand.”). We may assume that these issues relate to influence. In other words, it is difficult for the Namibian university students to determine who or what their cognitive authorities are. Moreover, terms and sentences related to health issues may remain difficult to understand because there are insufficient opportunities to encounter health information (Huotari et al., 2016). In addition to poor health information infrastructure, this result may be related to a lack of literature written in the respondents’ own language, as English is their second language, and possibly a lack of a reading culture (Lumbu, 2014, cited in Huotari et al., 2016). In this situation, it may be easier to trust people who do not use professional terms, that is, lay people.

While the health information infrastructure is still under development, it is not defined enough to support people’s information needs and learning sufficiently so as to become health information literate (see Huotari et al., 2016). Moreover, the lack of a reading culture and the practice of oral story telling may mean that the boundaries of the sphere of health

information are loose and not well-defined enough to give health information providers sufficient influence and hence gain a proper degree of cognitive authority.

Discussion

This study aimed at increasing our understanding of the multifactorial structure of the EHIL screening tool. This was done by exploring whether the notion of cognitive authority explains the identified differences on the Confidence factor among Finnish and Namibian samples when validating the EHIL screening tool (Hirvonen et al., 2016). This idea is supported by Niemelä et al. (2012), who acknowledge that “[n]o rapid methods exist for screening overall everyday health information literacy” (p.130), and that the tool allows identifying individuals having problems with everyday health information literacy.

Furthermore, previous studies on the use of scales or assessment tools for health literacy and health information literacy in diverse cultural environments indicate that tools should be adjusted to fit better with varying cultural characteristics (Dowse, 2016; Dowse, Lecoko & Ehlers, 2010, both cited in Huotari et al., 2016).

When, as in this study, the interest lies in IL in the health context, confidence or the lack of it is a core issue. This motivates us to pursue explanations for the difference indicated by Hirvonen et al. (2016). This study provides an example of a conceptual exploration that allows some deeper understanding of potential reasons for cultural differences. For this exploration, a timely concept was applied because authority is one of the six frames of the Framework for Information Literacy for Higher Education by the Association of College and Research Libraries (ACRL, 2015). Therefore, the study contributes to further studies adjusting the EHIL screening tool to varying types of contemporary information environments.

This study has limitations. The exploration is based on the results of two different comparative studies. These studies were conducted for different purposes and their study populations overlap. In this study, the results were applied in a compatible manner to explore an idea that arose when reflecting on the two studies' results in the light of a new project involving further development of the tool introduced, tested and validated for

screening individuals' HIL in an everyday life context. The findings of this study cannot be generalized to any population, but need further examination.

Future studies

In the CogAHealth project we will continue viewing HIL as IL in the context of health. However, to widen our perspective and to allow a better understanding of the information content in contemporary health information environments, we will apply the latest definition by ACRL (2015, p. 3) stating that IL is “the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning”.

Moreover, the concept of new literacies will be applied. Because new literacies refer to participation, production, non-professional expertise, and shared authority (Gee, 2010), the concept allows the understanding of literacies as a social, everyday practice in which the content of information gains its meaning (Selander & Kress, 2010). Texts, when viewed through the notion of new literacies, are multimodal and diversified, in other words, figurative, aural, written, numerical, gestural, factual, or imaginative, as well as being transforming and transformative (Martin & Grudziecki, 2006). Therefore, the concept of new literacies may prove relevant in dealing with dynamic health information environments which are increasingly digital.

The research methodology applied in the CogAHealth project is based on a socio-cultural perspective pursuing new theoretical and conceptual understandings of cognitive authorities in health contexts based on examining the phenomenon in empirical settings involving young people. A systematic review of studies on cognitive authority will allow reflection on the empirical findings. Case Studies I and II will provide a learner and trustee, that is, students' and teachers' perspectives in formal learning environment, whereas Case Studies III and IV will focus on the learner perspective in informal and non-formal environments. In these studies, for example, mediated discourse analysis (Norris & Jones, 2005) including a variety of multimodal data (interviews, video recordings, observations, informant generated data, field notes, questionnaires, participants' productions including digital videos, reflective texts, data from social networking sites) will be utilized.

Conclusion

This study aimed at exploring whether the notion of cognitive authority further explains the difference identified when validating the three-factorial structure of the EHIL screening tool. The exploration shows that the concept with its sub-concepts has some explanatory potential which should be examined further in the CogAHealth project. The results could be utilized, for example, to adjust the screening tool for different cultural environments of health information. It is evident that health information literacy is positively associated with people's health behaviour. Therefore, it is also important that tools screening individuals' HIL are accurate for use in promoting health and healthy life-style among different populations with varying ethnic backgrounds and cultural environments.

References

- Association of College and Research Libraries, ACRL (2015). *Framework for information literacy for higher education*. Retrieved from <http://www.ala.org/acrl/standards/ilframework>
- Doty, C. (2015). Social epistemology and cognitive authority in online comments about vaccine safety. In *iConference 2015 Proceedings*.
- Gee, J. P. (2010). *New digital media and learning as an emerging area and “worked examples” as one way forward*. Cambridge, MA: MIT Press.
- Hirvonen, N. (2015). Health information matters: everyday health information literacy and behaviour in relation to health behaviour and physical health among young men (Dissertation, University of Oulu). Available from Acta Universitatis Ouluensis. B 133. Retrieved from <http://urn.fi/urn:isbn:9789526210407>
- Hirvonen, N., Enwald, H., Nengomasha, C., Abankwah, R., Uutoni, W., Korpelainen, R. et al. (2016). *Validating the factorial structure of an everyday health information literacy screening tool in three different populations*. Poster presented at *Proceedings of the ISIC2016, Zadar*.
- Hirvonen, N., Ek, S., Niemelä, R., Pyky, R., Ahola, R., Korpelainen, R., Huotari, M.-L. (2016). Everyday health information literacy in relation to health behavior and physical fitness: A population-based study among young men. *Library & Information Science Research*, 38(4), 308-318. doi: 10.1016/j.lisr.2016.11.013
- Huotari, M.-L., Enwald, H., Hirvonen, N., Keränen, A.-M., Jokelainen, T., Salonurmi, T. et al. (2015). Everyday health information literacy in counselling on healthy eating. The case of PrevMetSyn. In S. S. Kurbanoglu et al. (Eds.), *Information literacy: moving towards sustainability. ECIL 2015. Communications in Computer and Information Science (CCIS) 552*, (pp. 223-232). Switzerland: Springer.
- Huotari, M.-L., Enwald, H., Hirvonen, N., Niemelä, R., Nengomasha, C., Abankwah R. et al. (2016). Everyday health information literacy of young Finnish and Namibian students: Is there a difference? In S. Kurbanoglu et al. (Eds.), *ECIL 2016. Communications in Computer and Information Science (CCIS) 676*, (pp. 138-146). Switzerland: Springer.

- Huvila, I. (2013). In Web search we trust? Articulation of the cognitive authorities of Web searching. *Information Research* 18(1), paper 567. Retrieved from <http://www.informationr.net/ir/18-1/paper567.html>
- Känsäkoski, H. (2014). Value creation in childhood obesity care and prevention. (Dissertation, University of Oulu). Available from Acta Universitatis Ouluensis. B 119. Retrieved from <http://urn.fi/urn:isbn:9789526204130>
- Känsäkoski, H. (2017). Information and knowledge processes as a knowledge management framework in health care: Towards shared decision making? *Journal of Documentation*, 73(4), 748-766. doi: 10.1108/JD-11-2016-0138
- Känsäkoski, H. & Huotari, M.-L. (2015). Applying the Theory of Information Worlds within a Health Care Practice in Finland. *Journal of Documentation*, 72(2), 321-341. doi: 10.1108/JD-05-2015-0065
- Lahelma, E., Martikainen, P., Laaksonen, M. & Aittomaki, A. (2004). Pathways between socioeconomic determinants of health. *Journal of Epidemiology & Community Health*, 58(4), 327-332. doi: 10.1136/jech.2003.011148
- Lankshear, C. & Knobel, M. (2011). *New literacies: everyday practices and social learning* (3rd ed.) Maidenhead, UK: McGraw-Hill Open University Press.
- Martin, A. & Grudziecki, J. (2006). DigEuLit: concepts and tools for digital literacy development. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(4), 1-19. doi: 10.11120/ital.2006.05040249
- Niemelä, R., Ek, S., Eriksson-Backa, K. & Huotari, M.-L. (2012). A screening tool for assessing everyday health information literacy. *Libri* 62(2), 125-134. doi: 10.1515/libri-2012-0009
- Norris, S. & Jones, H. J. (eds.) (2005). *Discourses in action: Introducing mediated discourse analysis*. New York: Routledge.
- Palmgren-Neuvonen, L. (2016). Social interaction in the context of new literacies: pedagogical potentials of publishing-oriented learner-generated video production (Dissertation, University of Oulu). Available from Acta Universitatis Ouluensis. E 164. Retrieved from <http://urn.fi/urn:isbn:9789526211886>
- Pitel, L., Gecková, A., Reijneveld, S. & van Dijk, J. (2013). Socioeconomic differences in adolescent health-related behavior differ by gender. *Journal of Epidemiology*, 23(3), 211-218. Retrieved from

- <http://doi.org/10.2188/jea.JE20120133>Räisänen, S. (2015). Changing literacy practices. A becoming of a new teacher agency (Dissertation, University of Oulu). Available from Acta Universitatis Ouluensis. E 153. Retrieved from <http://urn.fi/urn:isbn:9789526208480>
- Savolainen, R. (2007). Media credibility and cognitive authority. The case of seeking orienting information. *Information Research*, 12(3). Retrieved from <http://www.informationr.net/ir/12-3/paper319.html>
- Selander, S. & Kress, G. (2010). *Design för lärande – ett multimodalt perspektiv*. Stockholm: Norstedt.
- Shipman, J.P.; Kurtz-Rossi, S.; Funk, C.J. (2009). The Health Information Literacy Research Project. *Journal of Medical Library Association*, 97(4), 293–301.
- Suorsa, A. & Huotari, M.-L. (2014). Knowledge creation in interactive events. A pilot study in the Joy of Reading program. In *Proceedings of ISIC, the Information Behaviour Conference, Leeds, 2-5 September, 2014: Part 1*, (paper isic02). Retrieved from <http://InformationR.net/ir/19-4/isic/isic02.html>
- UNDESA (2017). *Youth. Fact Sheet*. The United Nations Department of Economic and Social Affairs. Retrieved from <http://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf>
- Voogth, J. M. & Pareja, R. N. (2010). *21st Century Skills*. Enschede: University of Twente.
- Wilson, P. A. (1983). *Second-hand knowledge: an inquiry into cognitive authority*. Westport, CT: Greenwood Press.
- WHO (2016). *Obesity and overweight. Fact sheet*. World Health Organization. Retrieved from <http://www.who.int/mediacentre/factsheets/fs311/en/>