Hack Health
YOU ONLY LIVE ONCE

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"BECAUSE I JUST KNOW THINGS AND I'M SURE!": HOW SOCIOECONOMICALLY DISADVANTAGED TWEENS' PRE-EXISTING BELIEFS CAN INFLUENCE THE SUCCESS OF THEIR ONLINE HEALTH-RELATED INFORMATION SEARCHES

Presentation for the ALISE 2015 Annual Conference

NATIONAL LIBRARY OF MEDICINE

STUDY CONTEXT

INTRODUCTION

LITERATURE REVIEW: HEALTH-RELATED INTERNET USE AMONG CHILDREN AND TEENS
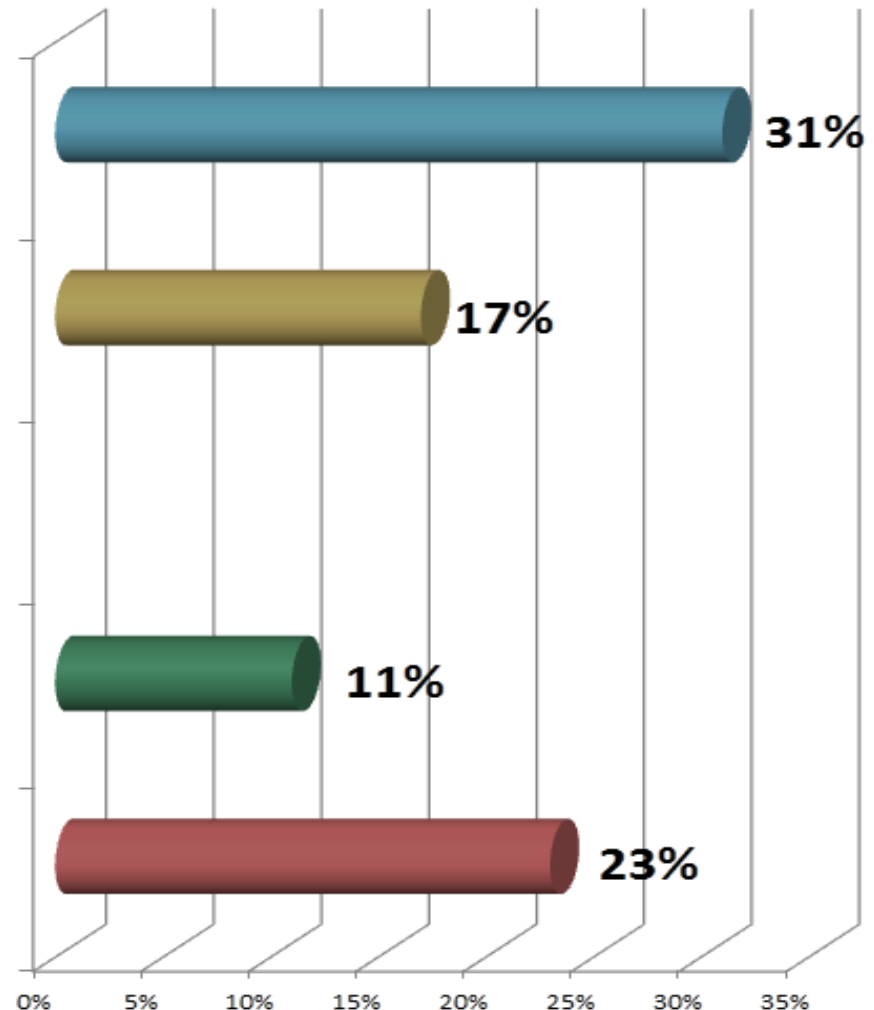
LITERATURE REVIEW: CHALLENGES FACED BY YOUTH IN ONLINE SEARCH AND CREDIBILITY ASSESSMENT

- Overly confident;
- Lack domain knowledge;
- Lack search experience;
- Search and skim quickly;
- Assume information is correct;
- Choose most easily/quickly accessible sources;
- Rely on surface characteristics; and
- Rely on their familiarity with the vocabulary, media, and source.

LITERATURE REVIEW: POSITIVE HYPOTHESIS TESTING

- Anchoring effect (Lau & Coiera, 2007 and 2009)
- Confirmation bias (Keselman et al., 2008)
- Positive hypothesis testing (Kayhan, 2013)
- Positive test strategy (Klayman & Ha, 1987)

RESEARCH QUESTIONS

- How accurate are tweens' perceptions regarding their knowledge of particular health conditions?

- Why do tweens feel sure (or unsure) about their answers to health-related questions following their online searches for answers to these questions?

METHODS: RECRUITMENT
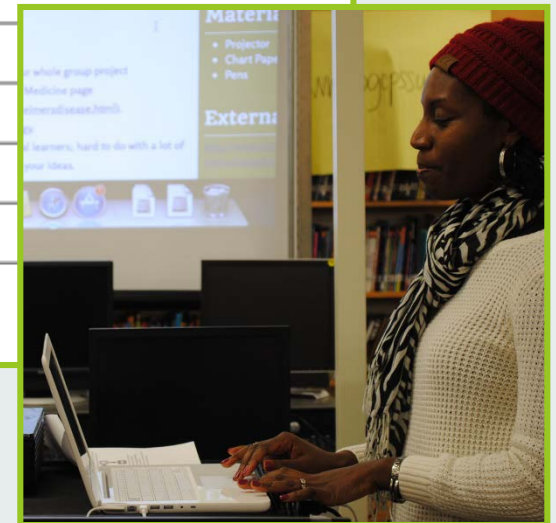
METHODS: DATA COLLECTION

#	Topic	Questions
1	Diabetes	a. Can eating too much sugar cause diabetes? b. Can type 2 diabetes be hereditary – that is, does it sometimes run in families?
2	Ulcers	a. Are ulcers caused by stress? b. Are ulcers caused by a virus?
3	Cancer	a. Can cancer be caused by using a cell phone? b. Can eating a lot of oranges cause cancer?

SAMPLE PRE-TASK QUESTIONNAIRE

Activity 2: Ulcers

Pre-questionnaire:

1. How would you rate your knowledge about ulcers?

1	2	3	4	5
Poor	Not very good	Neutral	Pretty good	Very good

2. How interested are you in the topic of ulcers?

1	2	3	4	5
Not at all Interested	Somewhat interested	Neutral	Somewhat interested	Very interested

3. What is an ulcer? _____

_____

4. What causes ulcers? _____

_____

SAMPLE POST-TASK QUESTIONNAIRE

Post-questionnaire:

Are ulcers caused by stress?   YES   NO

What words did you use to search for this information? _____

_____

List the URL(s) where you got this information: _____

_____

How sure do you feel about your answer to this question?

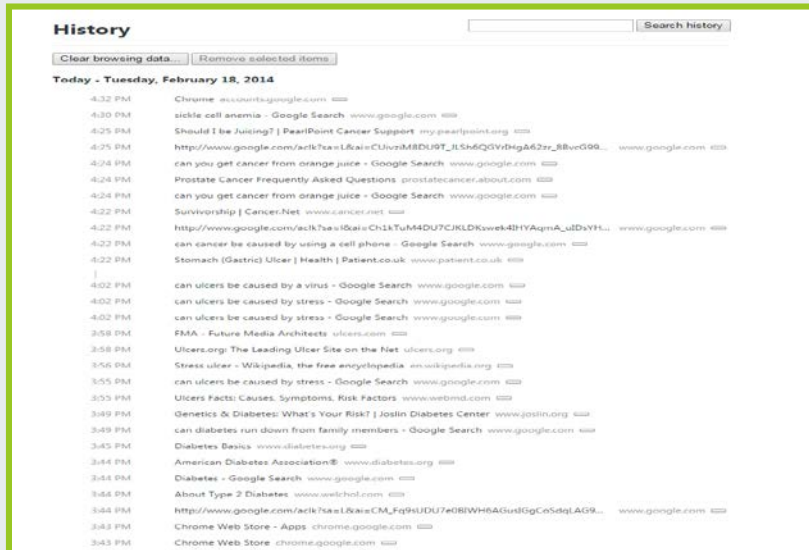| 1	2	3	4	5
Not at all	Not very sure	Neutral	Pretty sure	Very sure

Please explain why you feel sure (or unsure) about your answer to this question:

_____

_____

_____

METHODS: DATA ANALYSIS

"I think diabetes is taking too much sugar, then I think it turns into fat, then it makes a big lump on your stomach."

STUDY PARTICIPANTS

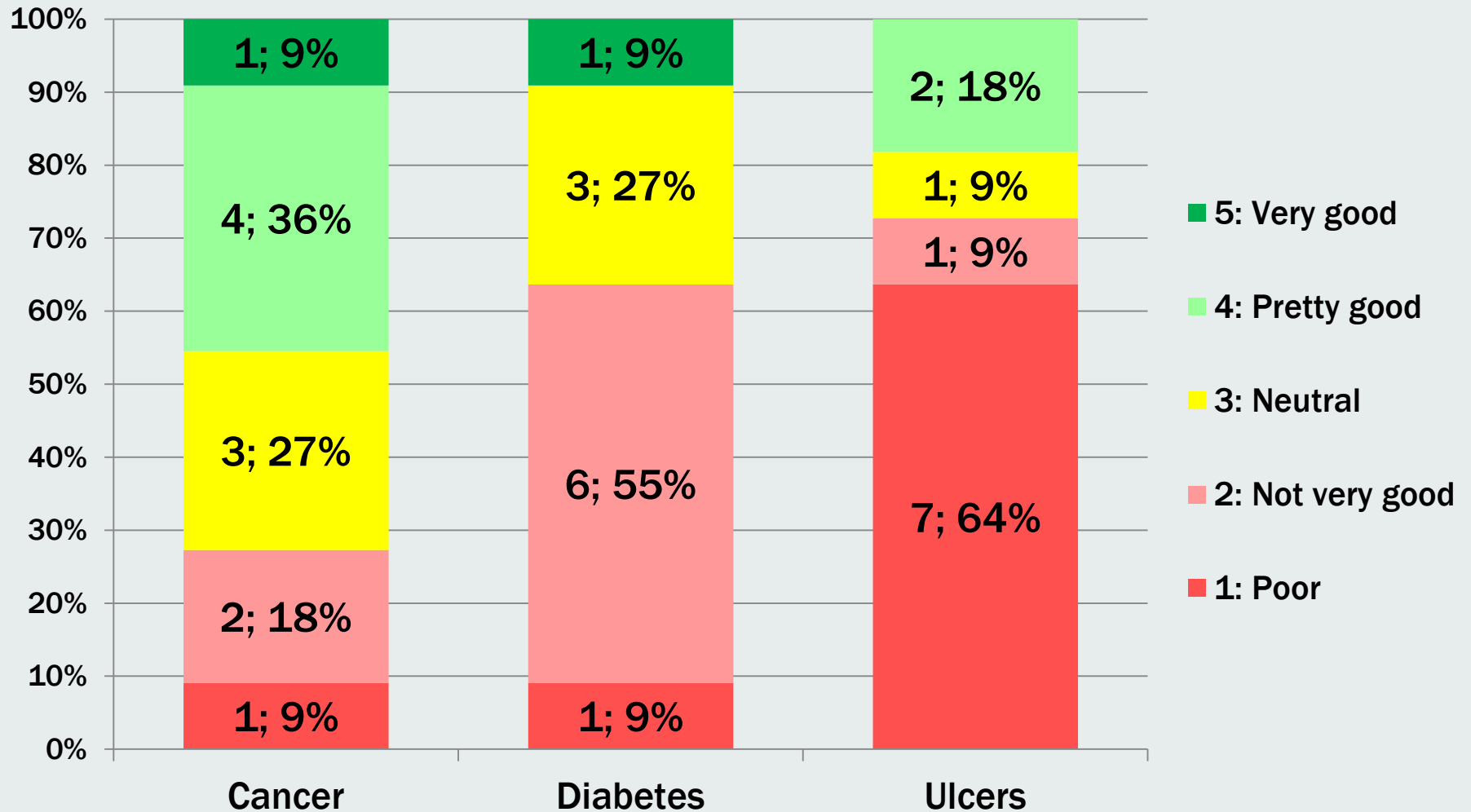| Gender	Male: 2 (18%) Female: 9 (82%)
Age (M = 12.9, SD = .83)	11: 1 (9%) 12: 1 (9%) 13: 7 (64%) 14: 2 (18%)
Race/Ethnicity	Black or African-American: 7 (64%) Hispanic or Latino: 2 (18%) Asian: 1 (9%) Other: 1 (9%)

PARTICIPANT SELF-RATINGS

Ratings of Health Information Literacy Skills

Activity	No Experience	Poor	Fair	Good	Very Good	Excellent
Find	0 (0%)	0 (0%)	1 (9%)	7 (64%)	1 (9%)	2 (18%)
Understand	0 (0%)	0 (0%)	3 (27%)	5 (46%)	2 (18%)	1 (9%)
Assess trustworthiness	0 (0%)	1 (9%)	2 (18%)	2 (18%)	5 (46%)	1 (9%)
Assess personal relevance	1 (9%)	1 (9%)	2 (18%)	2 (18%)	2 (18%)	3 (27%)
Apply	0 (0%)	0 (0%)	4 (36%)	1 (9%)	4 (36%)	2 (18%)
Sum	**1 (2%)**	**2 (4%)**	**12 (22%)**	**17 (31%)**	**14 (25%)**	**9 (16%)**

= 72% Total

FINDINGS: RQ #1
ACCURACY OF "KNOWLEDGE PERCEPTIONS"

- Michael: Rated his knowledge of diabetes as "not very good"; but provided an insightful definition.

  "A disease that has to do with your body's insulin."

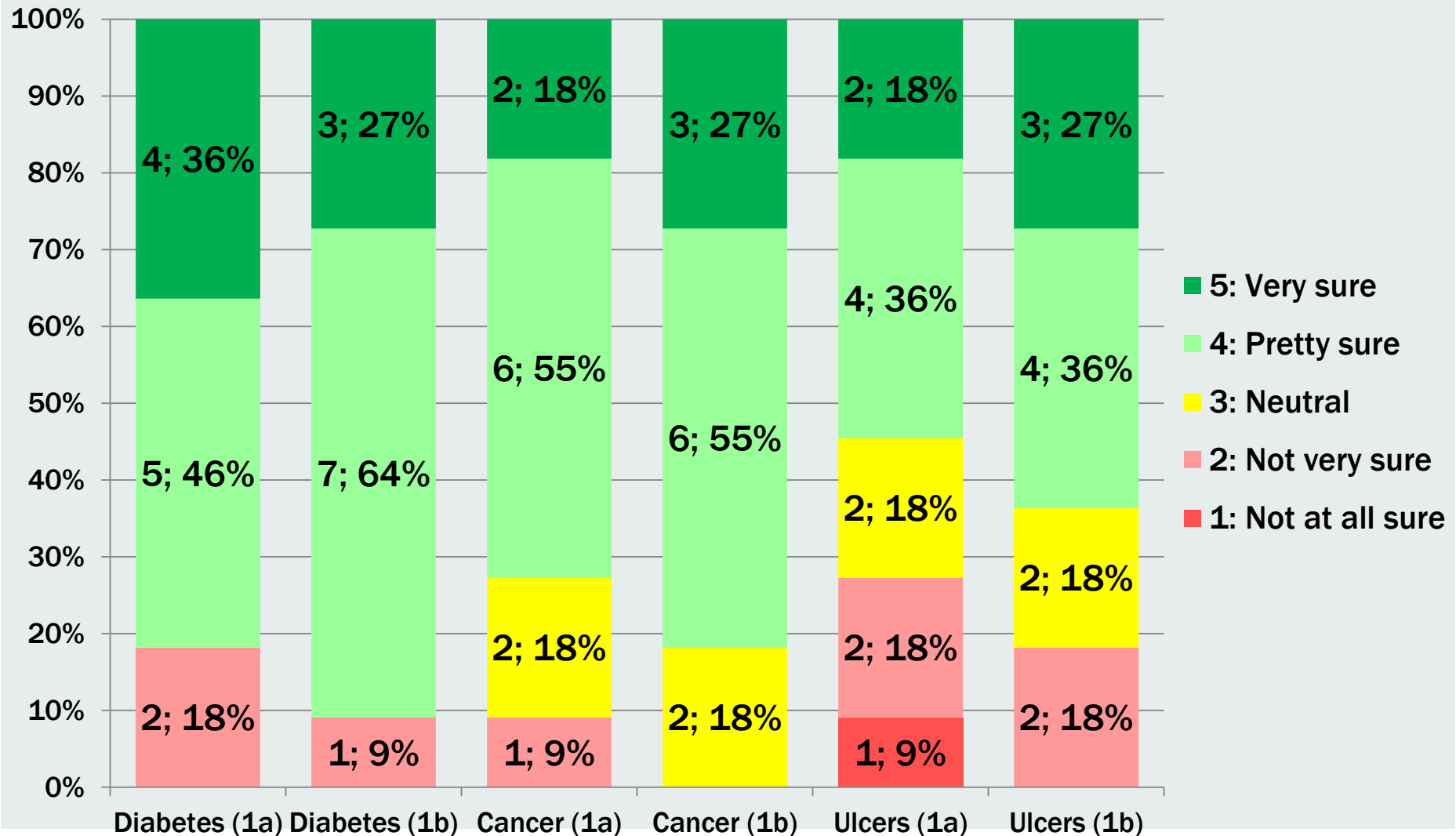- Madison: Rated her knowledge of ulcers as "pretty good," but offered an incorrect definition.

  "I think ulcer is when you don't eat too much and then the worms in your stomach start wa[s]ting your stomach and then it leave[s] a bruise and it really hurts."

  "Cancer is a disease that creates tumors in your body which can lead to death."

- Elena (who rated her knowledge of cancer as "not very good") offered a correct definition

"How sure do you feel about your answer to this question?"

Sure Knowledge	Sure Trust	Sure Hunch	Unsure
Participant found information online that matched what he/she already knew or had been told.	Participant believed the particular Website where he/she obtained the information or the Internet, in general.	Participant had a hunch or feeling that the information he/she found online is correct.	Participant was unable to find the information online or the information he/she found did not match his/her prior beliefs.

Figure 1. Participants' reasons for feeling sure (or unsure) of their answers to health-related questions

FINDINGS: RQ #2
SURE OF THEIR ANSWERS - KNOWLEDGE

- "I feel sure of my answer [because] my friend's mom has diabetes and she told him it's not from eating too much sugar" (Chloe)

- "I feel sure about my answer because (1) my grandmother has diabetes, (2) my mom is a nurse, and (3) I searched up diabetes a few years ago." (Tiana)

- "I feel sure because I have heard of people saying it and doctors and also because of I searched it on the Internet." (Madison)

FINDINGS: RQ #2
SURE OF THEIR ANSWERS - TRUST

- "I'm sure in my answer because I got it off the Internet." (Gabrielle)

- "I'm sure of my answer because the website [kidshealth.org] has lots of information on health topics." (Tiana)

- "It [medicinenet.com] gives good information." (Diamond)

- "Because the URL [cancer.gov] ends in .gov so it comes from the government." (Elena)

- "The website [diabetes.org] gave me good reasons to why it happens and how it happens." (Diamond)

FINDINGS: RQ #2
SURE OF THEIR ANSWERS - HUNCH

- "I have a feeling in my gut." (Diamond)

- "It's a belief." (Kimi)

- "I just have a feeling." (Diamond)

- "Because I just know things and [I] am sure." (Alyssa)

FINDINGS: RQ #2
UNSURE OF THEIR ANSWERS

- "I'm not sure because there's not enough information." (Chloe)

- "I feel neutral because I never knew that using too much of cell phone could cause cancer." (Madison)

- "I don't feel sure because I don't have background information about it." (Chloe)

DISCUSSION

Our participants:
- Lacked domain knowledge and prior search experience;
- Were confident in their search ability and quickly conducted searches;
- Skimmed web pages and guessed if they couldn't quickly find an answer;
- Automatically trusted the Internet;
- Made credibility judgments that were primarily intuitive (hunch-based) or heuristic (based on generalized rules of thumb)

DISCUSSION

- Prior beliefs affected search; many used search to confirm what they thought they already knew (or didn't search at all based on their confidence in their pre-existing knowledge).

IMPLICATIONS

1. Incorrectly believes he/she knows answer → May either not engage in search or may focus search on locating corroborating information

2. Correctly believes he/she already knows answer, but is not confident → Conducts search and finds incorrect information, revising previously correct belief

3. No relevant knowledge → Conducts search and accepts first answer, without attempting to assess accuracy or credibility

IMPLICATIONS

Lack of domain knowledge, lack of search experience, and high confidence in ability to use the Internet to find info.
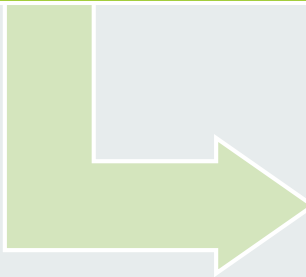
Tendency to quickly and haphazardly search, select search results, skim Web pages, and assume that information is correct
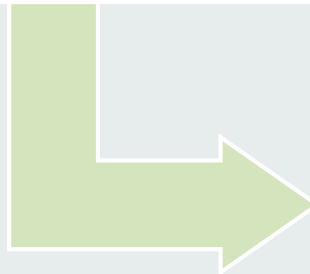
Finding and believing incorrect information and/or strengthening of incorrect preexisting beliefs

RECOMMENDATIONS

- **Don't assume you're right**

Even when you feel very sure about an answer, keep in mind that the answer may not be correct.

- **Don't assume you're wrong**

You may actually have correct information, even if the information you encounter on the Internet does not match.

- **Take an open approach**

Maintain a critical stance by not including your pre-existing beliefs as keywords.

- **Verify, verify, verify**

Information found on the open Web needs to be validated, no matter how the information appears on the site.

CONCLUSION AND FUTURE WORK

PROJECT SUPPORT

- We appreciate the support of the National Library of Medicine, the Information Policy & Access Center at the University of Maryland and the students and school librarians who participated in HackHealth.

QUESTIONS?

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REFERENCES

- Agosto, D. E. (2002a), "Bounded rationality and satisficing in young people's Web-based decision making", *Journal of the American Society for Information Science and Technology,* Vol. 53 No. 1, pp. 16–27.
- Agosto, D. E. (2002b), "A model of young people's decision-making in using the Web", *Library & Information Science Research,* Vol. 24 No. 4, pp. 311–341.
- American Association of School Librarians (AASL) (2009), *Standards for the 21st-century learner in action*, American Association of School Librarians, Chicago, IL.
- Eastin, M. S. (2008), "Toward a cognitive developmental approach to youth perceptions of credibility", in Metzger, M. J. and Flanagin, A. J. (Eds.), *Digital Media, Youth, and Credibility,* The MIT Press, Cambridge, MA, pp. 101-122.
- Eastin, M. S., Yang, M., and Nathanson, A. (2006), "Children of the net: An empirical exploration into the evaluation of Internet content", *Journal of Broadcasting & Electronic Media,* Vol. 50, pp. 211-230.
- Fergie, G., Hunt, K., and Hilton, S. (2013), "What young people want from health-related online resources: A focus group study", *Journal of Youth Studies*, Vol. 16 No. 5, pp. 579-596.
- Fidel, R., Davies, R. K., Douglass, M. H., Holder, J. K., Hopkins, C. J., Kushner, E. J., Miyagishima, B.K., and Toney, C. D. (1999), "A visit to the information mall: Web searching behavior of high school students", *Journal of the American Society for Information Science*, Vol. 50 No. 1, pp. 24-37.
- Flanagin, A. J., and Metzger, M. J. (2008), "Digital media and youth: Unparalleled opportunity and unprecedented responsibility", in Metzger, M. J. and Flanagin, A. J. (Eds.), *Digital media, youth, and credibility,* The MIT Press, Cambridge, MA, pp. 5-27.
- Foss, E., Druin, A., Yip, J., Ford, W., Golub, E., and Hutchinson, H. (2013), "Adolescent search roles", *Journal of the American Society for Information Science and Technology,* Vol. 64 No. 1, pp. 173-189.

REFERENCES

- Gasser, U., Cortesi, S., Malik, M., and Lee, A. (2012), *Youth and digital media: From credibility to information quality.* The Berkman Center for Internet & Society Research Publication Series, No. 2012-1. Available at: http://dml2011.dmlhub.net/sites/dmlcentral/files/resource_files/ssrn-id2005272.pdf (accessed 7 July 2014).

- Gutnick, A. L., Robb, M., Takeuchi, L., and Kotler, J. (2010), *Always connected: The new digital habits of young children.* Available at: http://www.joanganzcooneycenter.org/wp-content/uploads/2011/03/jgcc_alwaysconnected.pdf (accessed 7 July 2014).

- Hansen, D. L., Derry, H. A., Resnick, P. J., and Richardson, C. R. (2003), "Adolescents searching for health information on the Internet: An observational study", *Journal of Medical Internet Research*, Vol. 5 No. 4, e25. doi:10.2196/jmir.5.4.e25

- Hirsh, S. (1999), "Children's relevance criteria and information seeking on electronic resources", *Journal of the American Society for Information Science,* Vol. 50, pp. 1265-1283.

- Hirsh, S. (2004), "Domain knowledge and children's search behavior", in Chelton, M. K. and Cool, C. (Eds.), *Youth information-seeking behavior: Theories, models, and issues,* Scarecrow Press, Lanham, MD, pp. 241–272.

- Hsieh-Yee, I. (1993), "Effects of search experience and subject knowledge on the search tactics of novice and experienced searchers", *Case of DIALOG Searches of ERIC*, Vol. 44, pp. 161–174. doi:10.1002/(SICI)1097-4571(199304)44:3<161::AID-ASI5>3.0.CO;2-8

- Jenkins, H. (2009), "Confronting the challenges of participatory culture: Media education for the 21st century", The MacArthur Foundation, The MIT Press, Cambridge, MA.

- Kayhan, V. O. (2013), "Seeking health information on the Web: Positive hypothesis testing", *International Journal of Medical Informatics,* Vol. 82 No. 4, pp. 268–275.

- Keselman, A., Browne, A. C., and Kaufman, D. R. (2008), "Consumer health information seeking as hypothesis testing", *Journal of the American Medical Informatics Association,* Vol. 15 No. 4, pp. 484-495.

- Klayman, J, and Ha, Y. (1987), "Confirmation, disconfirmation, and information in hypothesis testing", *Psychological Review*, Vol. 94 No. 2, pp. 211-228.

REFERENCES

- Lau, A. Y. S., and Coiera, E. W. (2007), "How do clinicians search for and access biomedical literature to answer clinical questions?", *Studies in Health Technology and Informatics,* Vol. 129 Pt. 1, pp. 152-156.

- Lau, A. Y. S., and Coiera, E. W. (2009), "Can cognitive biases during consumer health information searches be reduced to improve decision making?", *Journal of the American Medical Informatics Association*, Vol. 16, pp. 54-65.

- Lenhart, A., Purcell, K., Smith, A., and Zickuhr, K. (2010), "Social media & mobile Internet use among teens and young adults. Pew Internet & American Life Project" Available at: http://www.pewinternet.org/~/media/Files/Reports/2010/PIP_Social_Media_and_Young_Adults_Report_Final_with_toplines.pdf (accessed 7 July 2014).

- Madden, M., Lenhart, A., Duggan, M., Cortesi, S., and Gasser, U. (2013), *Teens and Technology 2013*. Available at: http://www.pewinternet.org/2013/03/13/teens-and-technology-2013/ (accessed 7 July 2014).

- Rideout, V. (2011), *Zero to 8: Children's Media Use in America*. Available at: http://www.commonsensemedia.org/research/zero-to-eight-childrens-media-use-in-america (accessed 7 July 2014).

- Rieh, S. Y. and Hilligoss, B. (2008), "College students' credibility judgments in the information seeking process", in Metzger, M. J. and Flanagin, A. J. (Eds.), *Digital Media, Youth, and Credibility,* Cambridge, MA, The MIT Press, pp. 49-72.

- Shenton, A. K. and Dixon, P. (2004). Issues arising from youngsters' information-seeking behaviour. *Library & Information Science Research, 26*(2), 177-200.

- Subramaniam, M. Taylor, N.G., St. Jean, B., Follman, R., Kodama, C. and Casciotti, D. (in press). As simple as that?: Tween credibility assessment in a complex online world. *Journal of Documentation*.

- Sundar, S. S. (2008). The MAIN Model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital Media, Youth, and Credibility* (pp. 73-100). Cambridge, MA: The MIT Press.

- Thompson, K. M., Jaeger, P. T., Taylor, N. G., Subramaniam, M., and Bertot, J. C. (2014). *Digital literacy and digital inclusion: Information policy and the public library*, Scarecrow, Lanham, MD.