“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
INTRODUCTION

Pre-existing knowledge

Search behaviors

Accuracy of decisions

Information retrieved

Health behaviors

Health outcomes
LITERATURE REVIEW: HEALTH-RELATED INTERNET USE AMONG CHILDREN AND TEENS

Percent of online teens that use the Internet to look for health, dieting, or physical fitness information: 31%

Percent of online teens that use the Internet to look for information about sensitive health topics, such as drug use and sexual health: 17%

Percent of teens from higher-income (HHI > $75,000) families that use the Internet to look for health information: 11%

Percent of teens from low-income (HHI < $30,000) families that use the Internet to look for health information: 23%
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

Interest Survey

If you are interested in participating, please complete and return this form to [name of school librarian] as soon as possible.

Parent or Guardian’s Name

Child’s Name

Child’s Grade

Child’s Age

Phone

Email

Best way to contact you □ Phone □ Email
## METHODS: DATA COLLECTION

<table>
<thead>
<tr>
<th>#</th>
<th>Topic</th>
<th>Questions</th>
</tr>
</thead>
</table>
| 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? |
Activity 2: Ulcers

Pre-questionnaire:

1. How would you rate your knowledge about ulcers?
   - 1: Poor
   - 2: Not very good
   - 3: Neutral
   - 4: Pretty good
   - 5: Very good

2. How interested are you in the topic of ulcers?
   - 1: Not at all interested
   - 2: Somewhat interested
   - 3: Neutral
   - 4: Somewhat interested
   - 5: 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:
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
“I think diabetes is taking too much sugar, then I think it turns into fat, then it makes a big lump on your stomach.”
<table>
<thead>
<tr>
<th><strong>STUDY PARTICIPANTS</strong></th>
</tr>
</thead>
</table>

| Gender              | Male: 2 (18%) |
|                     | Female: 9 (82%) |
| Age                 | 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

<table>
<thead>
<tr>
<th>Activity</th>
<th>No Experience</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (9%)</td>
<td>7 (64%)</td>
<td>1 (9%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>Understand</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>3 (27%)</td>
<td>5 (46%)</td>
<td>2 (18%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>Assess trustworthiness</td>
<td>0 (0%)</td>
<td>1 (9%)</td>
<td>2 (18%)</td>
<td>2 (18%)</td>
<td>5 (46%)</td>
<td>1 (9%)</td>
</tr>
<tr>
<td>Assess personal relevance</td>
<td>1 (9%)</td>
<td>1 (9%)</td>
<td>2 (18%)</td>
<td>2 (18%)</td>
<td>2 (18%)</td>
<td>3 (27%)</td>
</tr>
<tr>
<td>Apply</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (36%)</td>
<td>1 (9%)</td>
<td>4 (36%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>1 (2%)</strong></td>
<td><strong>2 (4%)</strong></td>
<td><strong>12 (22%)</strong></td>
<td><strong>17 (31%)</strong></td>
<td><strong>14 (25%)</strong></td>
<td><strong>9 (16%)</strong></td>
</tr>
</tbody>
</table>

= 72% Total
FINDINGS: RQ #1
RATE YOUR KNOWLEDGE ABOUT THE TOPIC

Cancer
- 1: Poor 1; 9%
- 2: Not very good 2; 18%
- 3: Neutral 3; 27%
- 4: Pretty good 4; 36%
- 5: Very good 1; 9%

Diabetes
- 1: Poor 1; 9%
- 2: Not very good 1; 9%
- 3: Neutral 3; 27%
- 4: Pretty good 6; 55%
- 5: Very good 1; 9%

Ulcers
- 1: Poor 2; 18%
- 2: Not very good 1; 9%
- 3: Neutral 1; 9%
- 4: Pretty good 7; 64%
- 5: Very good 1; 9%
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 wasting your stomach and then it leaves a bruise and it really hurts.”

- Elena (who rated her knowledge of cancer as “not very good”) offered a correct definition.
  - “Cancer is a disease that creates tumors in your body which can lead to death.”
FINDINGS: RQ #2
HOW SURE DO YOU FEEL ABOUT YOUR ANSWER?

Diabetes (1a) Diabetes (1b) Cancer (1a) Cancer (1b) Ulcers (1a) Ulcers (1b)

- 5: Very sure
- 4: Pretty sure
- 3: Neutral
- 2: Not very sure
- 1: Not at all sure
FINDINGS: RQ #2
WHY SURE/UNSURE OF THEIR ANSWERS

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

Sure Knowledge: Participant found information online that matched what he/she already knew or had been told.

Sure Trust: Participant believed the particular Website where he/she obtained the information or the Internet, in general.

Sure Hunch: Participant had a hunch or feeling that the information he/she found online is correct.

Unsure: 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)
“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)
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.
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
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

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