



# Internet Search Strategies, Concepts of Justification and Epistemic Beliefs

Joseph Wansing and Phillip K. Wood,  
University of Missouri

Email: woodkph@gmail.com

## Purpose

- To examine how students' internet information seeking strategies are related to their epistemic beliefs and reflective Judgment.

## Participants

- 244 introductory psychology students. (selected from an initial pool of 300 students)

## Measures

- Internet Search Strategies Assessment (ISSA)
- Epistemological Beliefs Inventory (EBI, Kardash & Wood 2002) (selected items)
- Reasoning About Current Issues Test (RCI) Wood (in prep)

The internet is one of the main ways that college students gather information. The ISSA attempts to quantify how one uses the internet to search for information. A factor analysis of the scale identified 4 factors based on what the questions were related to; Scientific sources, Argument balance and quality, Opinion confirmation, and De-identified search.

Questions	Scientific Sources	Argument Balance & Quality
I would look more at websites that seemed to be from researchers.	0.77	0.08
I would look more at websites that appeared to be from educational institutions.	0.73	0.15
I would look more at websites that appeared to be from government agencies.	0.72	-0.05
I would try to find websites that gave both pro and con arguments.	0.00	0.75
I would try to find websites from different kinds of researchers.	0.11	0.63
I would try to find and read the website that made the best quality arguments on either side of the issue.	0.18	0.57
I would give more weight to news websites that I personally agree with.	0.00	-0.07
I would look at web sites that seem to look at things the way I do for facts that support my opinion.	-0.14	0.00
I would look at the text underneath each website and go with my gut as to which sites look like they are providing reliable information.	-0.02	0.16
I would give more weight to news websites that I trusted to give more objective factual information.	0.20	0.00
I would look at a few of the most popular websites from the search and read those.	0.19	0.00
I would turn off any personalized search options in my browser.	-0.05	0.22
I would open up an incognito window and conduct my search from there.	0.19	-0.11
I would enter a statement that says one opinion, count those websites and then enter the opposite statement and count those.	0.02	0.06
I would count up how many websites seemed to take a stand one way or another.	0.02	0.06
I would try to find a Wikipedia page dealing with the issue.	0.11	-0.30

## Research Questions

- Do Internet Search Strategies fall into recognizable categories?
- Are Internet Search Strategies Related to the students' assumptions about learning?
- Are Internet Search Strategies related to the sophistication of how people reason about real world issues?

## Narrative:

Students, like many of us, use the internet to search for information about everyday real-world issues. Real-world issues are considered here as issues which people may reasonably disagree about.

How people look for information about such real-world issues often has to do with their **personal epistemology**, that is their ideas about what is true or knowable about a given situation. Two constructs have been proposed to describe student epistemologies.

- Information seeking and reasoning about controversial issues is often stated as a central goal of higher education. Students' **epistemological beliefs** deal with the degree that student's knowledge is fixed, whether mastery of material is innately easier for "good students" and whether experts are omniscient authorities. These beliefs have been related to student academic performance.
- Reflective Judgment** is an assessment construct in higher education which describes how individuals view the nature of knowledge and the role of experts in reasoning about real world controversies.

Questions	Opinion Confirmation	De-identified Search
I would look more at websites that seemed to be from researchers.	-0.07	0.02
I would look more at websites that appeared to be from educational institutions.	0.09	-0.06
I would look more at websites that appeared to be from government agencies.	-0.03	0.05
I would try to find websites that gave both pro and con arguments.	0.01	-0.10
I would try to find websites from different kinds of researchers.	-0.05	0.24
I would try to find and read the website that made the best quality arguments on either side of the issue.	0.06	0.03
I would give more weight to news websites that I personally agree with.	0.69	0.11
I would look at web sites that seem to look at things the way I do for facts that support my opinion.	0.57	0.00
I would look at the text underneath each website and go with my gut as to which sites look like they are providing reliable information.	0.46	-0.14
I would give more weight to news websites that I trusted to give more objective factual information.	0.38	0.02
I would look at a few of the most popular websites from the search and read those.	0.33	-0.36
I would turn off any personalized search options in my browser.	0.04	0.57
I would open up an incognito window and conduct my search from there.	-0.02	0.48
I would enter a statement that says one opinion, count those websites and then enter the opposite statement and count those.	0.18	0.44
I would count up how many websites seemed to take a stand one way or another.	0.04	0.27
I would try to find a Wikipedia page dealing with the issue.	0.12	-0.10

- This project used exploratory factor analysis to assess the dimensions of internet search strategies and the two approaches to epistemological beliefs using items of the Epistemological Beliefs Inventory (EBI) and the Reasoning About Current Issues test (RCI). The relation of these constructs to reflective judgment, academic aptitude, and political views were also examined

- The Factor Analysis of the EBI revealed 4 main factors;

Questions	Simple Knowledge	Quick Learning	Innate Ability	Omniscient Authority
It is annoying to listen to lecturers who cannot seem to make their mind up as to what they really believe.	0.62	0.05	-0.03	-0.06
I really appreciate instructors who organize their lectures carefully and then stick to their plan.	0.59	-0.03	-0.10	0.10
It's a waste of time to work on problems that have no possibility of coming out with a clear-cut answer.	0.57	0.13	0.04	-0.15
If professors would stick more to the facts and do less theorizing, one could get more out of college.	0.55	0.11	-0.01	-0.02
I like information to be presented in a straightforward fashion; I don't like having to read between the lines.	0.53	-0.01	-0.04	-0.03
When I study, I look for the specific facts.	0.49	-0.15	0.11	0.23
If something can be learned, it will be learned immediately.	-0.04	0.90	-0.08	0.01
Usually, if you are ever going to understand something, it will make sense to you the first time.	0.01	0.66	0.07	0.05
The information we learn in school is certain and unchanging.	0.05	0.38	0.12	-0.10
Almost all the information you can understand from a textbook you will get during the first reading.	0.03	0.36	0.06	-0.07
Working on a difficult problem for an extended period of time only pays off for really smart students.	0.07	0.34	0.21	-0.01
You will just get confused if you try to integrate new ideas in a textbook with knowledge you already have about a topic.	0.20	0.28	0.12	-0.10
Successful students understand things quickly.	0.02	0.12	0.64	0.01
The really smart students don't have to work hard to do well in school.	-0.10	-0.02	0.57	-0.20
Being a good student generally involves memorizing a lot of facts.	-0.01	0.00	0.52	-0.03
Some people are born good learners; others are just stuck with a limited ability.	0.27	-0.01	0.52	0.07
Understanding main ideas is easy for good students.	0.03	0.09	0.41	0.04
I find it refreshing to think about issues that experts can't agree on.	-0.18	0.13	0.01	0.58
I try my best to combine information across chapters or even across classes.	0.01	0.02	-0.03	0.51
Even advice from experts should be questioned.	-0.01	-0.23	0.00	0.44
A sentence has little meaning unless you know the situation in which it was spoken.	0.00	-0.14	0.01	0.40
Forming your own ideas is more important than learning what the textbooks say.	-0.01	0.03	-0.05	0.40
Wisdom is not knowing the answers, but knowing how to find the answers.	0.03	-0.13	-0.05	0.33
A really good way to understand a textbook is to reorganize the information according to your own personal scheme.	0.10	-0.04	0.11	0.32
Today's facts may be tomorrow's fiction.	-0.03	-0.17	0.10	0.20

- In addition we found several interesting correlations Simple Knowledge is correlated with Quick Learning ( $r=.22$ ), Good Student (.24), Opinion confirmation ( $r=.23$ ), and how liberal ( $r=.23$ ).
- Quick Learning is correlated with Innate Ability ( $r=.32$ ) and Self Learning ( $r=-.31$ ).
- Innate Ability is correlated with Simple Knowledge ( $r=.24$ ) and how liberal ( $r=.21$ ).
- ACT was correlated with how much you read opinions that you disagree with ( $r=-.18$ ), the overall RJI variable ( $r=.22$ ), and the immigration factor ( $r=.25$ ).

## Discussion

In terms of internet use, quality of internet sources and seeking balanced information are distinct but related constructs. Other individuals appear to use search strategies which merely confirm their existing opinion.

The EBI factor analysis replicated the four factors originally found in the Wood and Kardash study (2002).

Although the RCI had some interesting correlations with other study variables, it did not correlate with either EBI or internet use scales. The overall intercorrelations of the RJI was around .30 and above, which shows decent inter-item reliability, given its brief format.