

# Let Me Google That For You: Trust, Thought and Truth In The Age of Search Engines

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## 1. The Problem

**When we want a piece of information, we all reach for our smartphones or start typing into our browser's search bar - but should we rely so much on Google? And what is that doing to our trust in our own knowledge?**

**Objective:** To determine how deeply ingrained trust and preference for search and external memory technology is in the information retrieval processes of today's technology-literate young adults.

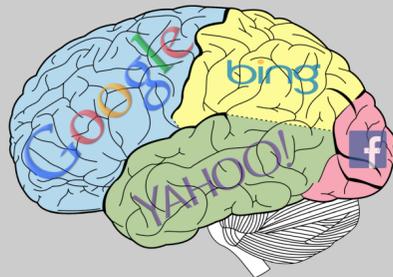
**Hypothesis:** If available, subjects will refer to search to either obtain knowledge or at least double-check their own knowledge rather than depend on memory when asked a short battery of factual, common-knowledge questions.

## 2. Background

- Memory has evolved alongside technology, and human beings are particularly adaptive to neurological changes based on new technology (Carr, 2011)
- Search technology is particularly ripe for integration into our cognition as it is customizable, low-effort and able to fade into the background (Clowes, 2013)
- Survey research by Pew indicates that the majority of American use search daily and are confident that it provides fair, unbiased information (Pew, 2012)
- Search users display a tendency towards satisficing in the selection of search information and the verification of that information (Brabazon, 2012)
- This supports Google's approach to search results, which sacrifices serendipitous discovery for one easily-acceptable "right" answer (Auletta, 2010)

### Transactive Memory

- A TMS is a socially-established cognitive division of labor where instead of remembering information, you rely on a social connection who has expertise in that area to provide that information (Peltokorpi, 2008) - **it's outsourcing for personal knowledge**
- A TMS works best when it is composed of those we already trust (Hollingshead, 2003) and those who are established experts in their assigned areas. Google is an expert in everything that we already trust.
- "Googleable" information is less likely to be remembered; transactive memory is activated instead (Sparrow, Liu & Wegner, 2011)



## 3. Methods

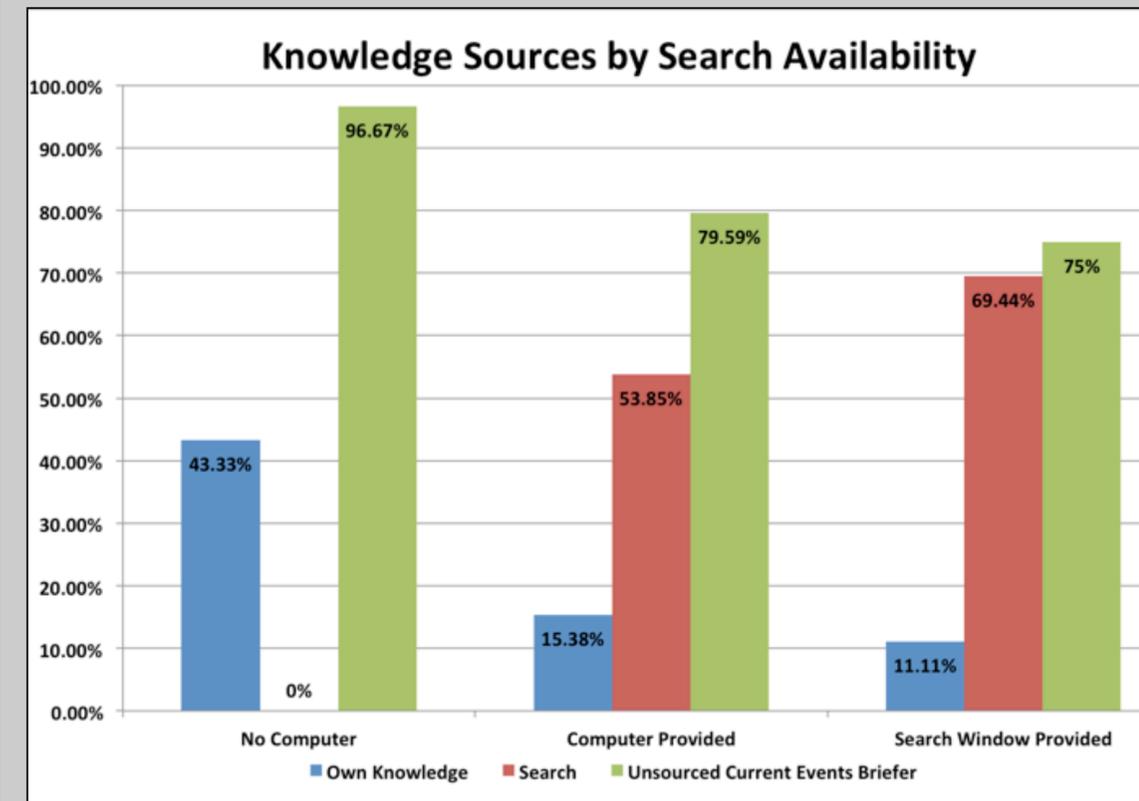
A convenience sample of GWU undergraduates was randomly assigned to three groups that created a hierarchy of distance to search technology:

- **Experimental Group A:** powered-up computer with no windows open
- **Experimental Group B:** powered-up computer with a search window open
- **Control Group:** no access to a computer

Subjects completed a 10 question battery on current events. They were told they

could use any method to answer, and given a paper current events briefer that contained the answers, but no sourcing information. During the battery, I observed which information sources were used and noted down emerging trends in subject behavior in a process of grounded theory-building. I noted similar behaviors, especially sequences of behaviors, and followed up with interviews of subjects with particularly interesting or telling behavior. Later I assembled a focus group with participants, where I gathered feedback on the trends they saw in themselves.

## 4. Results



### Quantitative Experimental Results

- Search availability correlated with search use (95% confidence interval, margin of error +/- 9.44%, n= 105)
- Search availability decreased use of other sources of information, heavily decreased use of own prior knowledge
- Overall, 61.33% of those subjects provided with computer access chose to use search - hypothesis strongly supported
- Trust in self limited even without search - even without search, students turn to external memory
- Control group show particular distrust of self - 43.33% of subjects used own knowledge, 96.67% turned to completely unsourced briefer.

### Grounded Qualitative Observation

- External memory can serve as a double-check: many students used briefer and search to cross-check each other, own knowledge
- Search dominates: own knowledge always corrected by search, even when search was wrong
- Subjects said briefer was used despite lack of sourcing as it had all the answers and was convenient
- Subjects rarely clicked past first page of results or scrolled past top
- Most subjects took suggestion of autocomplete
- Jump to the search engine immediate, instinctual
- Subjects reported impulse to look information up on a smartphone

## 5. Conclusions

It seems we are tied to search, and sometimes trust it more than we trust ourselves. This raises two concerns: how do we know if Google's "right" answer is *the* right answer, and how do we know that the Google results or where they point have not changed since our last visit? We remember how to get to the information, not the information itself, and the Internet can change without warning, invisibly, on a minute-to-minute basis. If Google makes a mistake, if a falsehood gets through, there are consequences in such a transactively linked, highly-trusted relationship.

## 6. Learn More

Pick up one of my handouts for a list of the articles cited on this poster - they're all well worth a read - as well as an abstract for the full paper, which includes a deeper dive into cultural consequences and the integration of Google into cognition. Better yet, get a copy of the full paper by visiting <http://goo.gl/ztevqM> or reading the QR code on the right.



Special thanks to Dr. Kerric Harvey and Dr. Patricia Phalen of GWU for their guidance and assistance with recruitment.

## Read The Whole Thing

Did this poster pique your interest? Take a tour through search technology's effects on the brain (past, present, and future), a look at the cultural consequences, and potential strategies for mitigation along with a deeper dive into the results in the full paper by visiting <http://goo.gl/zteVqM> or scanning the QR code at right.



## Author Info

Mike DeVito is a researcher from Washington, DC who is currently finishing a M.A. in Media and Public Affairs at The George Washington University. His primary research interests lie at the intersection of algorithms, media, and cognition, and have included research into the cognitive effects of search, attachment to algorithmic technology, algorithmic ethics, and emotional morality algorithms for AI. He currently works as Managing Editor of a social storytelling institute at GW, Planet Forward, and teaches advanced multimedia reporting to GW undergraduates. He holds a B.A. in Journalism and Mass Communication and has worked as a local reporter and freelance visual storyteller and multimedia producer. Mike is originally from Connecticut and is personally interested in robots (sentient ones, mostly), guitar (playing loudly), and cats (all types). His work is at [mikedevito.net](http://mikedevito.net).

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## Full Paper Abstract

This article delves into a popular pathway for obtaining information of all sorts: Internet search. Through an extensive review of cross-disciplinary findings from media studies, communication, cognitive science, computer science, psychology, linguistics, sociology and library science, the emergence and consequences of a dependence on Internet search as a primary source of information is explored, including its function as a part of a widespread transactive memory system relationship with average people, its potential for integration directly into human cognition, and its historical precedents. Current information-seeking behavior is analyzed using data from multiple sources and potential cognitive, communication and political consequences are examined. An original behavioral experiment paired with qualitative observational, interview, and focus group data expand on the literature, finding support for heavy trust in Internet search and external memory over one's own internal knowledge and behavior that suggests a closely dependent relationship on search on a personal level. Key steps for mitigation and further mindful monitoring are addressed.

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