Online Search Interactions:

Research Questions to Be Asked
and Some Methods
for Answering Them

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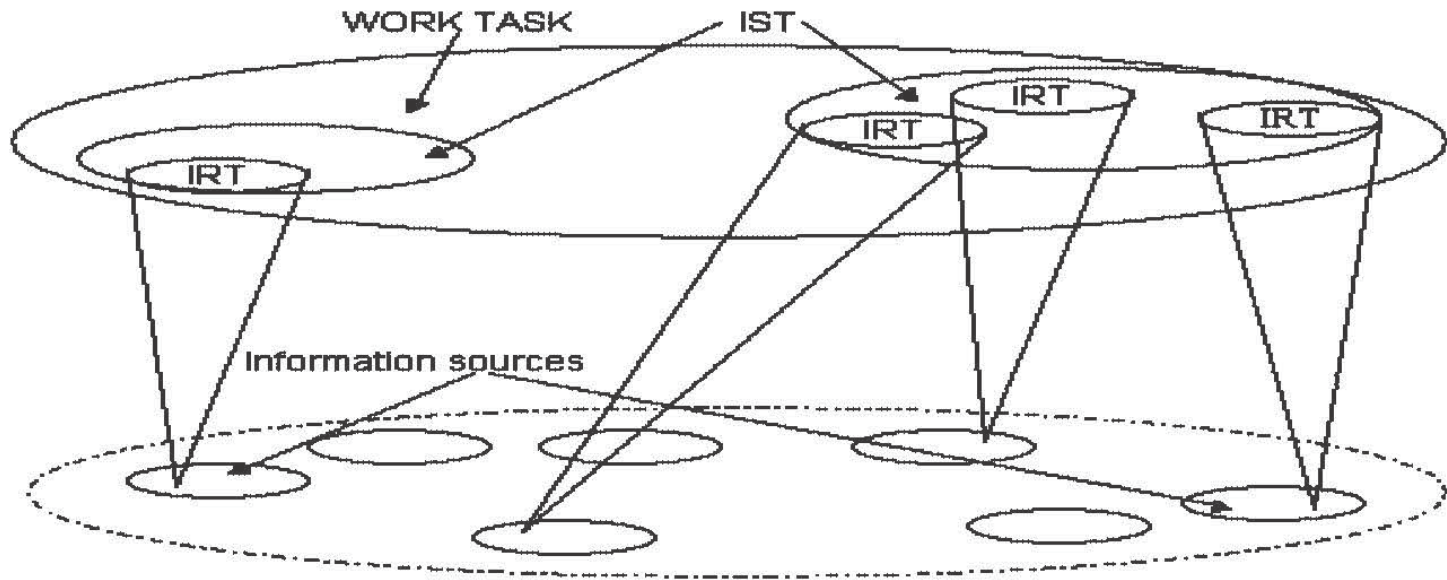NJ ASIST Distinguished Lectureship, 12/7/2016

Searching is a part of daily life

Questions that might be asked

- Why does someone initiate a search?

- When someone searches, what do they do? What are they thinking? What are they feeling?

- How are their actions, thoughts, and feelings affected by the characteristics of their information need? The related work/leisure task? The search interactions?

- When/why did they stop the search?

- What do they do with their search results?

Search tasks

IST – information seeking task
IRT – information retrieval task

Typical interactive IR experiment

- Randomly assign participants to search with one search engine or the other

- Ask each participant to complete multiple search tasks

- Compare performance and/or process indicators

Image: Jamie Edwards, Pinterest

Simulated work tasks

- "a simulated work task situation is a short textual description tailored to suit the test participants by presenting a realistic situation that motivates the test participant to search the IR system" (Borlund, 2016, p.313)

Simulated work task examples

- Your boarding school is located in the municipality of Mariagerfjord, and the boarding school is one among several within the municipality. You know this because your school collaborates with some of the other boarding schools. But exactly how many boarding schools are there in the municipality of Mariagerfjord?

- In May next year, you are travelling with the boarding school to Rome and Florence. You know both cities are known for their history, art, and architecture. As preparation for the trip you would like to study some of the sightseeing spots and tourist attractions in order to be able to contribute with good suggestions when planning the trip.

Repository of Assigned Search Tasks (RepAST)

Searching

Repository of Assigned Search Tasks ([RepAST](#))

Results

Systematic Review of Assigned Search Tasks

A Collaborative Project Being Conducted at the University of North Carolina at Chapel Hill, the University of British Columbia, and the University of Sheffield

Project Description | **Repository of Assigned Search Tasks (RepAST)**

Search Results

35 results.

Sort by: [▼]

Citation

Liu, J., & Belkin, N.J. (2015). Personalizing information retrieval for multi-session tasks: Examining the roles of task stage, task type, and topic knowledge on the interpretation of dwell time as an indicator of document usefulness. Journal of the Association for Information Science & Technology, 66(1), 58-81.

Task type:	Parallel task
Task type definition:	A task in which "the accomplishment of on subtask is not necessarily based on that of others" (p.64)
Tasks:	1	As a beat reporter for automobiles, you want to write a feature story about cost-effective cars, specifically, hybrid cars for low to mid-income level families. You want to focus on three models of cars from auto manufacturers that are famous for good warranties and fair maintenance costs, and the three models are: Honda Civic sedan, Toyota Camry sedan, and Nissan Altima sedan. You want to write about the features of each of the three models, including aspects such as: standard features and specifications, safety, pricing, reviews, possible pictures, and so on.You have three sessions to finish this assignment, and you will need to finish the writing on one car in each session. At the final session, you will need to integrate the three reports.

Task type:	Dependent task
Task type definition:	A task in which "the accomplishment of some subtask depends on that of others" (p.64)
Tasks:	1	As a beat reporter for automobiles, you want to write a feature story about cost-effective cars, specifically, hybrid cars for low to mid-income level families. To do it, you need to learn what makes and models have hybrid cars, what are their features, prices, and safety levels, etc. Specifically, you will need to accomplish the following activities: Collect information on what manufacturers have hybrid cars. You want to list the different models that are good for mid-level income families. Select three models that you will mainly focus on in this feature story. You want to introduce their specific features that make you choose them out of other models. Compare the pros and cons of three models of hybrid cars. You will have three sessions to finish this assignment. You will need to finish one activity in each session, but the order of the three sessions is up to you.

Complexity as a dimension of a search task

- Task characteristics that imply an increase in information load, information diversity, or rate of information change (Campbell, 1988)

- Possible characteristics
  - A higher number of desired outcomes to be achieved
  - More possible paths to the desired end state
  - Conflicting interdependencies among these paths
  - Uncertain links among these paths

Objective and subjective complexity

- Objective task complexity, based on number of paths involved

- Subjective task complexity, based on doer's perception of task complexity
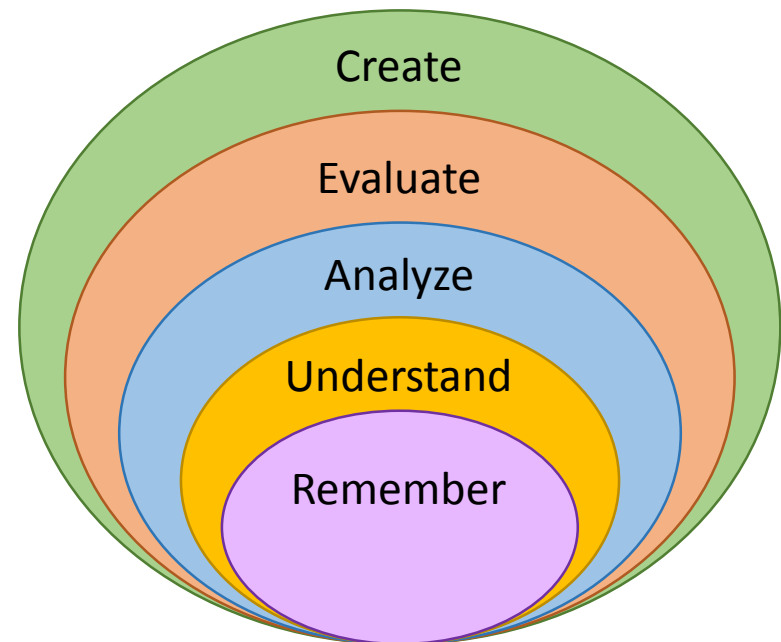
Complexity operationalized

- Number of subtopics or facets
- Number of query terms and/or operators required to complete the search
- Number of subtasks or steps required to complete the search
- Number of sources or items required by task
- The indeterminate nature of the task
- The cognitive complexity of addressing the information need

The effect of cognitive complexity on search strategy formulation

- 47 study participants

- Completed 5 search tasks at 5 different levels of cognitive complexity, in one of 4 domains

- Levels of complexity, based on the revised Bloom's taxonomy
  - Remember (level 1)
  - Understand (level 2)
  - Analyze (level 3)
  - Evaluate (level 4)
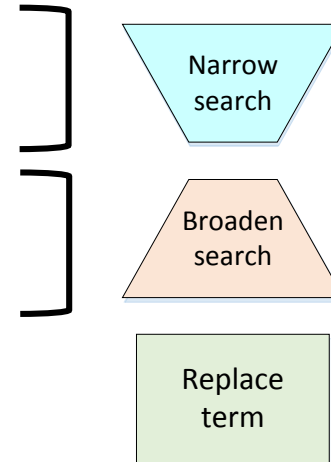 - Create (level 5)

Example search tasks

- Understand (level 2), Commerce
  - You have noticed that some coffee shops in your neighborhood advertise that they only sell 'fair trade' coffee. In order to decide whether to support these coffee shops you want to understand what the label 'fair trade' really entails. What are the requirements for coffee to be labeled as fair trade?

- Create (level 5), Health
  - Your great granny's doctor has told her that getting more exercise will increase her fitness and help her avoid injuries. Your great granny does not use the Internet and has asked you to create an exercise program for her. She is 90-years old. Put together two thirty-minute low-impact exercise programs that she could alternate between during the week.
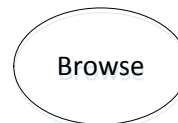
Analyzing the search moves

- Each move in each search was analyzed
  - Add concept
  - Narrow with term change
  - Delete concept
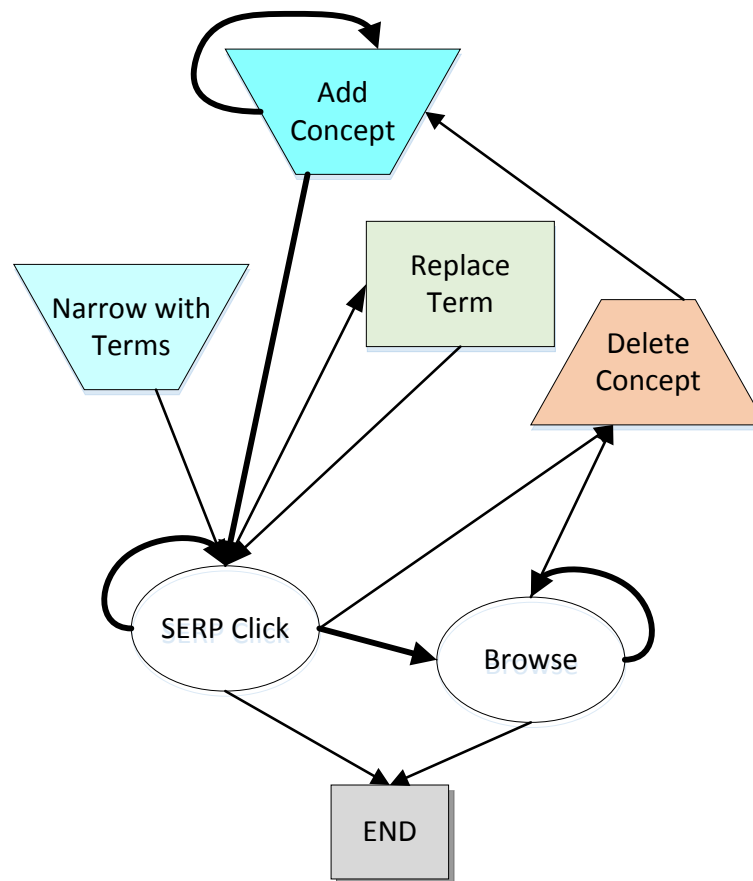 - Broaden with term change
  - Replace term

  - SERP click
  - Browse

Narrow search

Broaden search

Replace term

SERP click
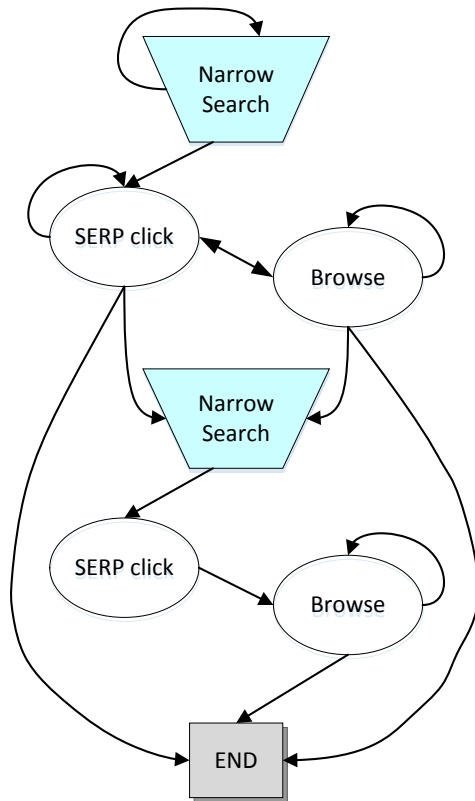
Browse

- 2974 moves across 235 searches

Which moves were used?

- The most frequently-used moves were:
  - Add concept (847)
  - Delete concept (183)
  - Replace term (138)
  - Add term + Narrow term (44)

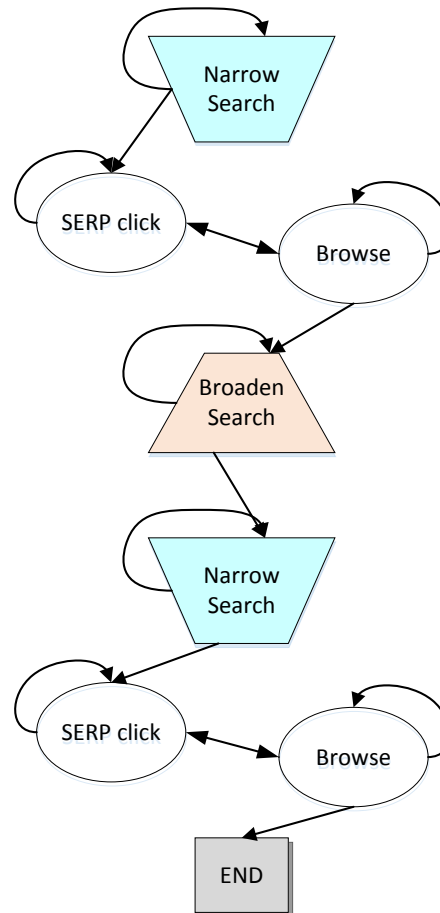 - SERP click (852)
  - Browse (832)
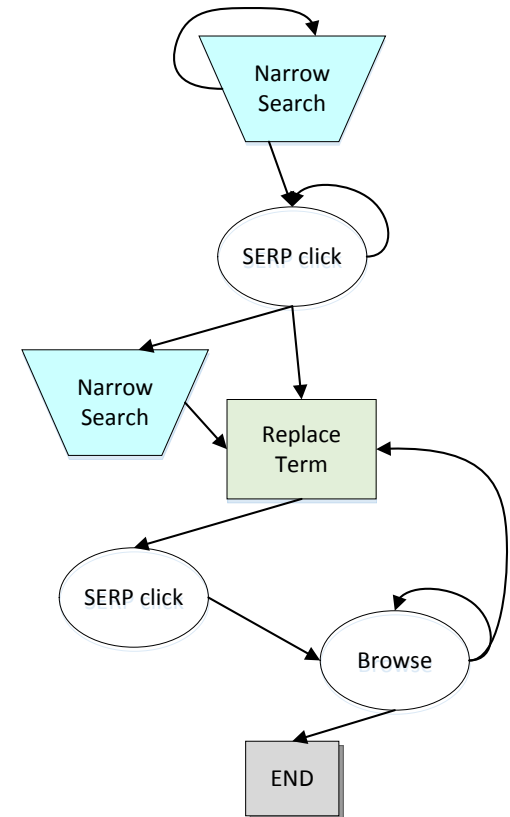
What strategies were used?

A: Narrow – Display –
[Narrow – Display]
24 searches

C: Narrow – Display –
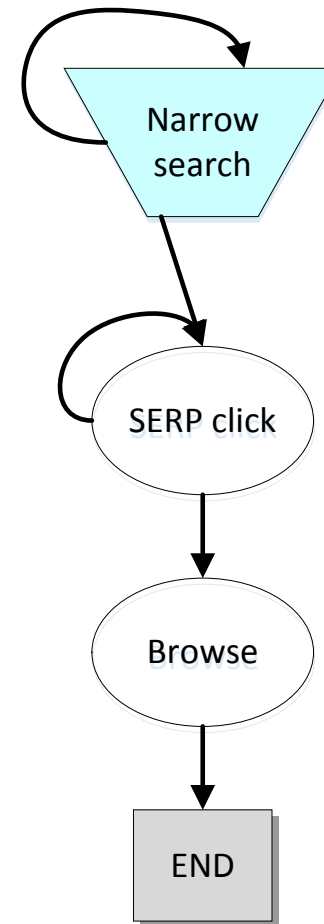Broaden – Narrow – Display
22 searches

G: Narrow – Display –
[Narrow] - Edit - Display
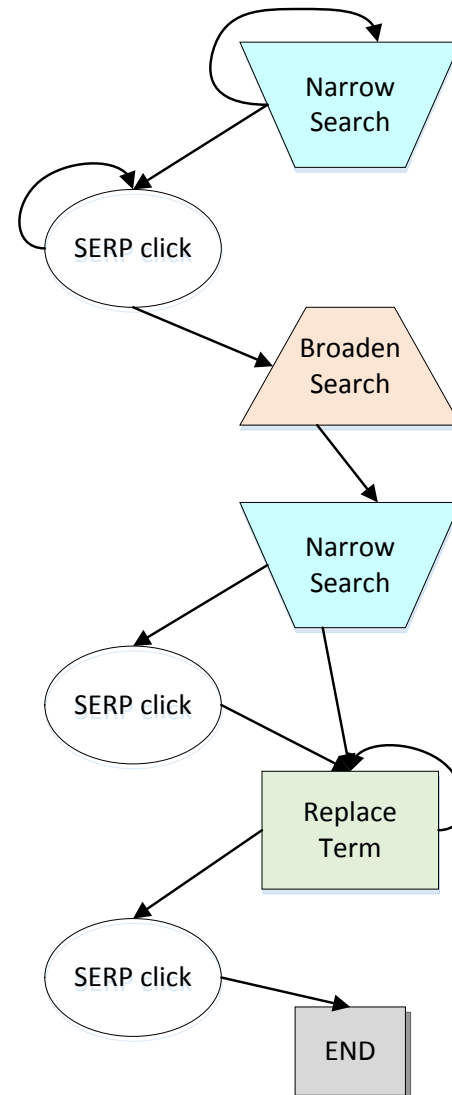19 searches

Effects of task complexity on strategy used

- Low level of task complexity led to single-query search strategies
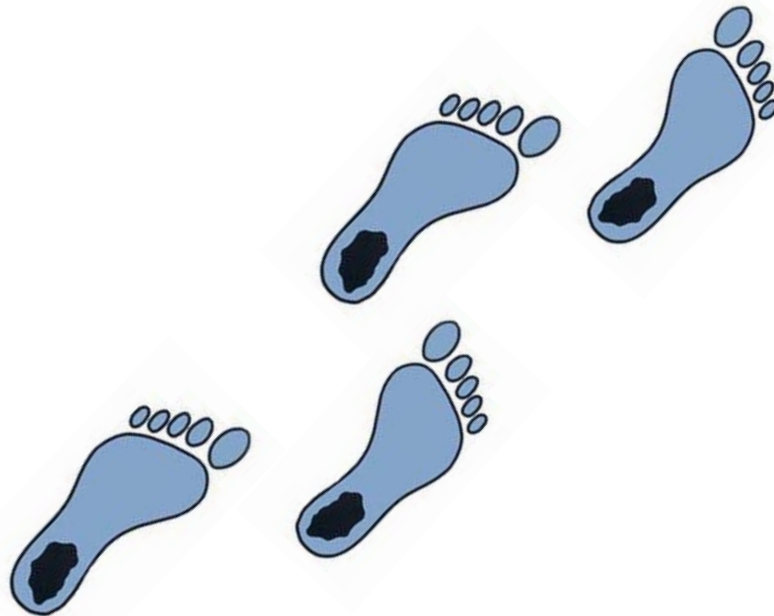
Specific task effects

- Entertainment/ Analyze (level 3) task → Pattern E
  - 5 of 12 searches used same pattern
  - 5 of 8 searches using that pattern were elicited by this task

- Task: Your sister is turning 25 next month and wants to do something exciting for her birthday. She is considering some type of extreme sport. What are some different types of extreme sports in which amateurs can participate? What are the risks involved with each sport?

Where have we been?
Where should we go next?

- Why people initiate a search; information needs that motivate a search

- People's searching behaviors; cognition and affect during search
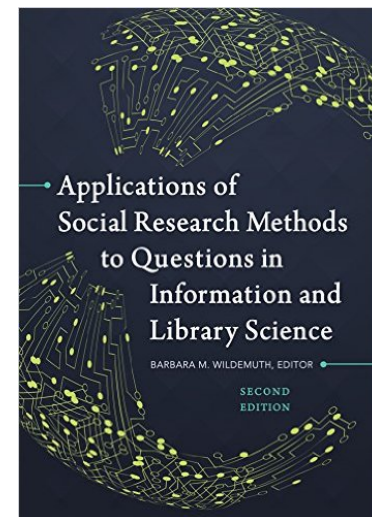
Questions? Comments?

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RepAST, https://ils.unc.edu/searchtasks/search.html

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