When More is Less: The Paradox of Choice in Search Engine Use

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When More Is Less: The Paradox of Choice in Search Engine Use

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ABSTRACT

In numerous everyday domains, it has been demonstrated that increasing the number of options beyond a handful can lead to paralysis and poor choice and decrease satisfaction with the choice. Were this so-called *paradox of choice* to hold in search engine use, it would mean that increasing recall can actually work counter to user satisfaction if it implies choice from a more extensive set of result items. The existence of this effect was demonstrated in an experiment where users (N=24) were shown a search scenario and a query and were required to choose the best result item within 30 seconds. Having to choose from six results yielded both higher subjective satisfaction with the choice and greater confidence in its correctness than when there were 24 items on the results page. We discuss this finding in the wider context of "choice architecture"—that is, how result presentation affects choice and satisfaction.

Categories and Subject Descriptors

H.1.2 [**User/Machine Systems**]: Human information processing.
H.3.3 [**Information Search and Retrieval**]: Information filtering.

General Terms

Design, Human Factors.

Keywords

Search engines, relevance judgments, satisfaction, user interfaces.

1. INTRODUCTION

If you type in your favorite pop singer's name to Google, you will be presented with a result set of possibly millions of items. Items within a single page may have perceivable differences, yet the better the engine has done its job, the greater the number of items that will appear relevant. In such a case, can you be content with the link you finally choose, given that you could not consider even an iota of the full number of results available? At the time of writing, Google offered 99,500,000 results for the query "Britney Spears." The situation is not that different from what Westerners face daily in the offline domain: massive choice. For example, wanting to buy breakfast cereal at a grocery store forces a choice from among some 273 products [28].

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Figure 1: ***Does it matter how many search results are presented? Six-item (left) versus 24-item (right) result listings in Google, materials used in the experiment. Note: In the 24-item list, the final three items are shown on a second page.***

Recent research in cognitive psychology has revealed an interesting effect of choice overload:

The paradox of choice: providing more options—particularly if they are highly relevant and success is personally important—will lead to poorer choice and degrade satisfaction [28].

Experimental demonstrations of this paradox are quite compelling and bespeak its generality. For example, passersby are more likely to buy jams on display, and more satisfied as customers when there are six jams to choose from than 24 [15]. University students are more likely to write an extra-credit essay, and write better essays, when they have six topics to choose from than 30 [15]. Employees are more likely to participate in 401(k) retirement plans when there are two rather than 59 funds to choose from [16]. But would the same apply to Google with, say, six versus 24 items? Figure 1 illustrates the situation.

The existence of this phenomenon could have important implications for how we think about search engine use. One presumption has been that *if* the user has the persistence to go through the result set, or a sufficient part of it, a larger number of items on the list indicates greater likelihood that (s)he has encountered an item of higher relevance as the end is reached. Ergo, the more results, the higher the effectiveness. If this assumption turns out to be questionable, we can ask whether search engines should be less like slavish "reporters" and more akin to personal assistants who guide customers to the most reasonable options in a store.

However, anyone can imagine a number of reasons for the effect not appearing in search engine use. For example, if users jump to

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- In studies of consumer goods
  - Large amounts of choice can lead to
    - user "paralysis"
    - poor choices
    - dissatisfaction (despite good choices)

> Look at this peanut butter! There must be three sizes of five brands of four consistencies! Who demands this much choice? I know! I'll quit my job and devote my life to choosing peanut butter! Is "chunky" chunky enough or do I need EXTRA chunky? I'll compare ingredients! I'll compare brands! I'll compare sizes and prices! Maybe I'll drive around and see what other stores have! So much selection, and so little time! (p. 107)

Watterson, B. (1996). It's a magical world. Kansas City: Andrews and McMeel.
Photo by Erich Vieth: http://dangerousintersection.org

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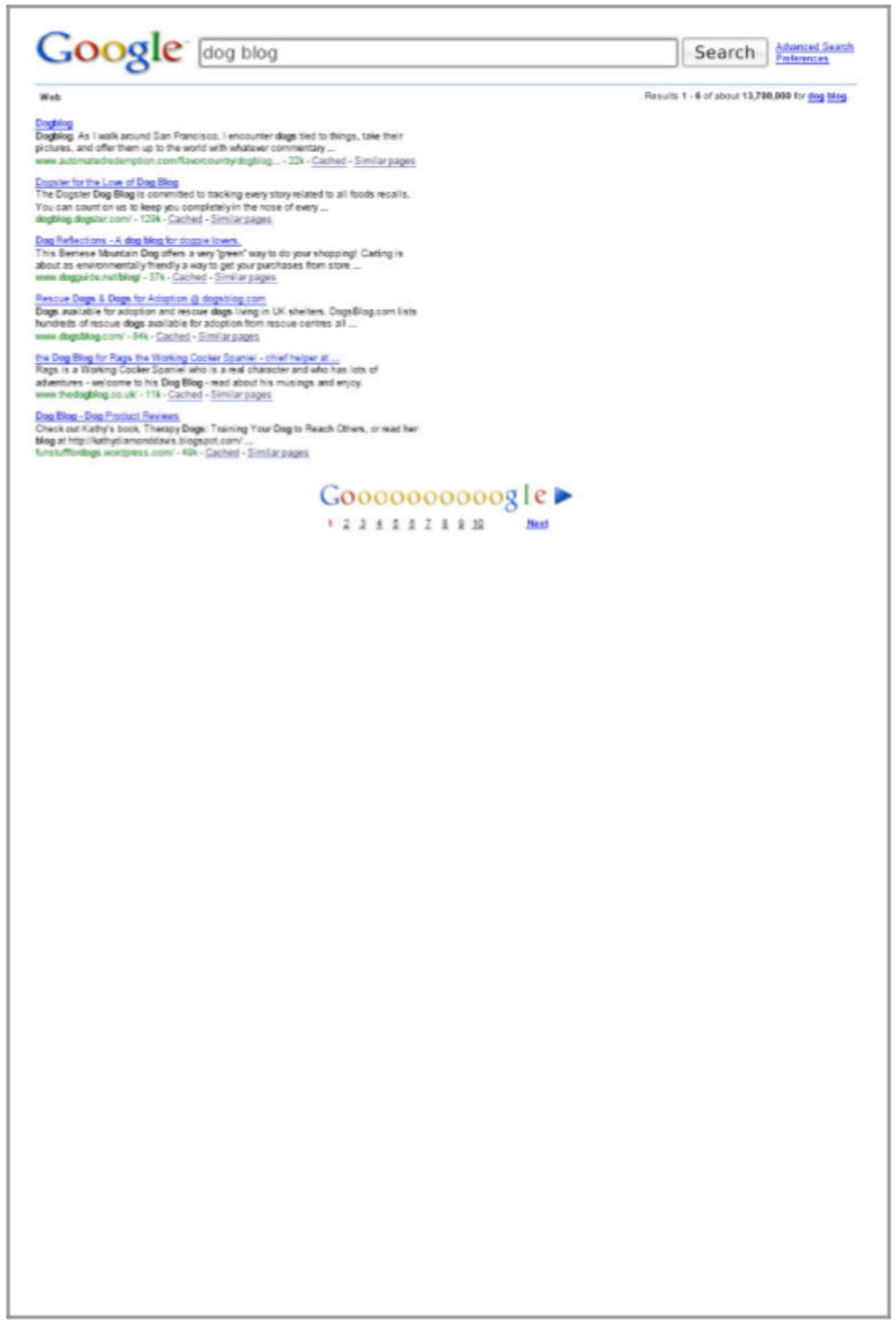
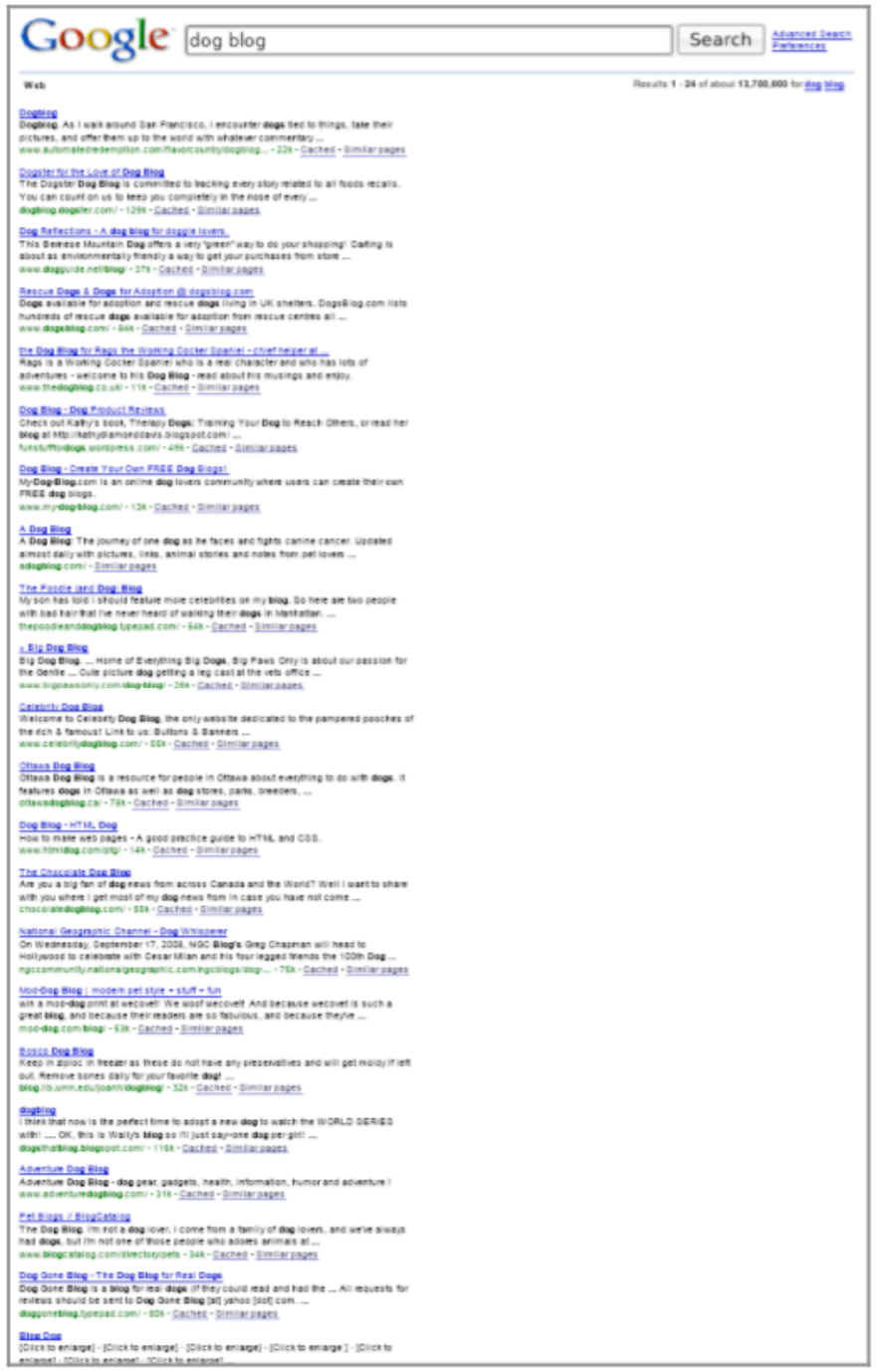
- Does the same effect occur in search results?





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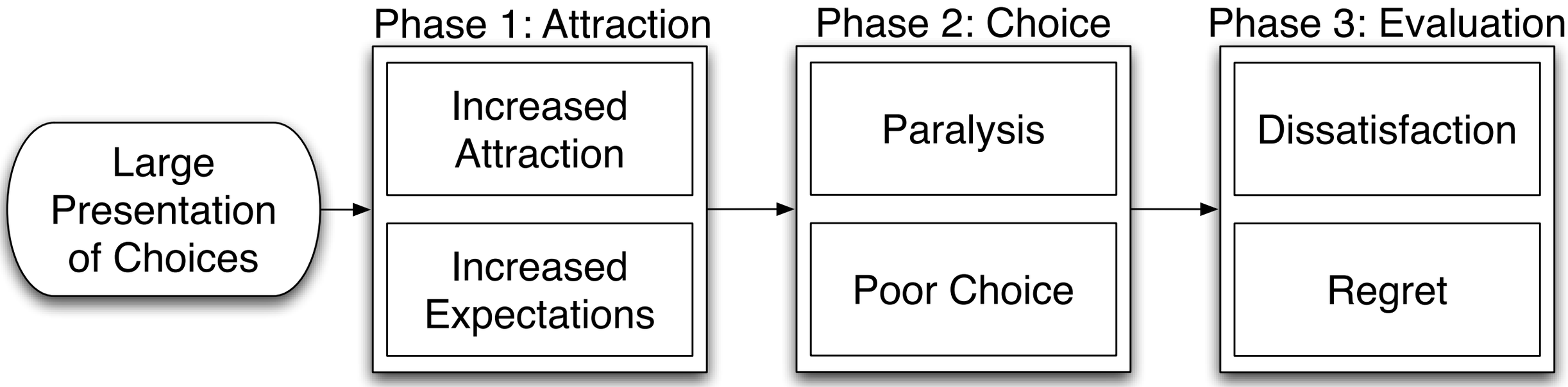
- Paradox of Choice Hypothesis



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- Methodology
  - Search
    - Paper based analysis
    - People picked the best answers to a provided query
      - Query types: fact-finding, problem-solving, subjective
      - 30 seconds
      - Google branded vs. Unknown brand
      - 6 results vs 24 results

	Google	Unknown
6 results	6 tasks	6 tasks
24 results	6 tasks	6 tasks

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- Methodology
  - Results/Evaluation
    - Ask users to rate after each choice
      - Satisfaction: “I am satisfied with my choice”
      - Confidence: “I am confident that my choice is correct”
      - Carefulness: “I made my choice carefully”
      - Suitability: “The results were suitable for the task”

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When more is less: the paradox of choice in search engine use

- Methodology
  - Results/Evaluation
    - Ask users to rate after each block
      - Satisfaction: “I am content with the search results”
      - Confidence: “I am confident that my choices were correct”
      - Suitability: “The results were suitable for the task”
      - Preference: “I would choose this search engine”

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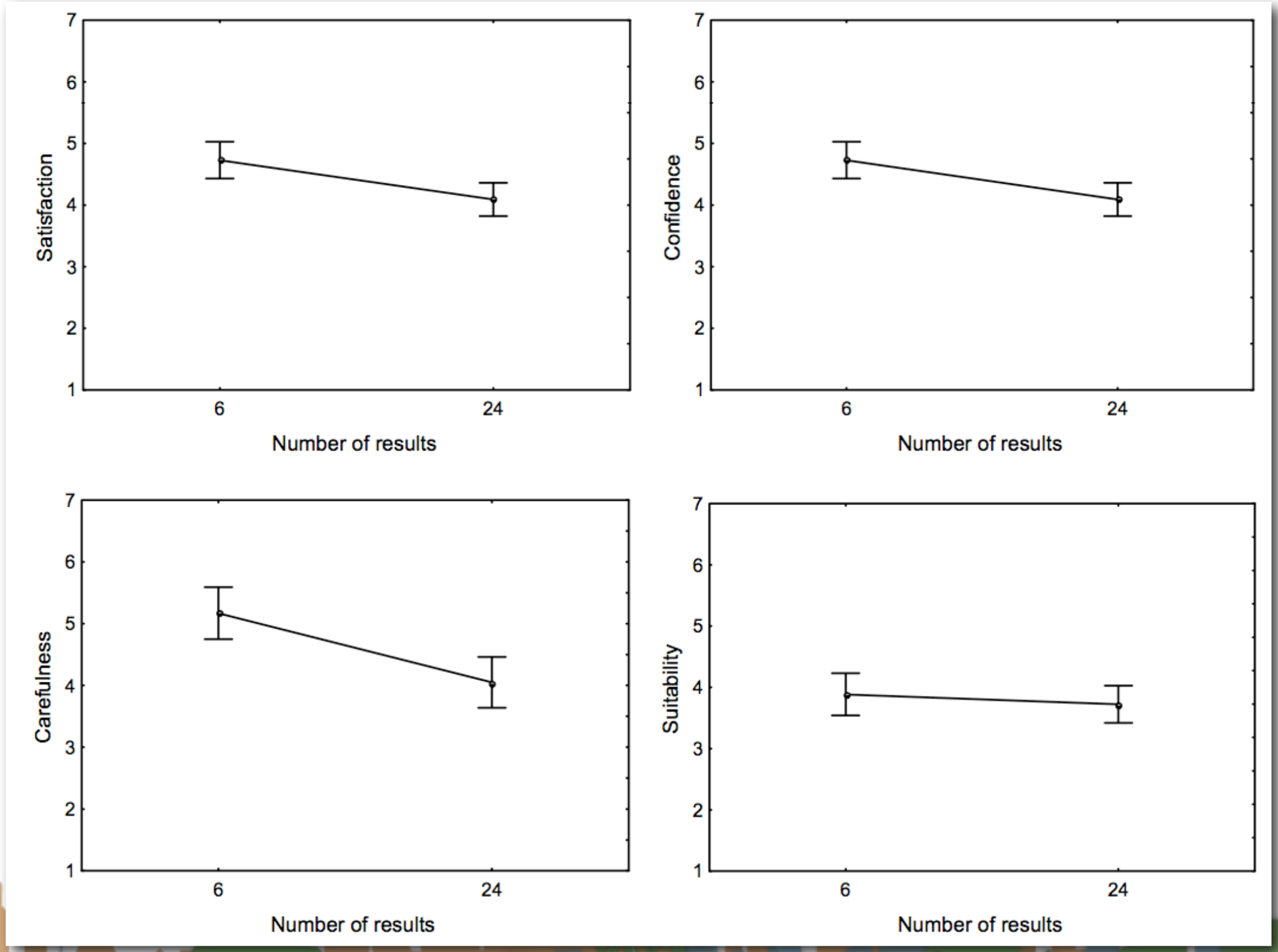
- Results



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- Results
  - Search engine didn't affect results
    - Users were more likely to use Google
  - Subjective query types were least effected by paradox
    - Small statistical significance
  - Counter to consumer studies

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