Figure 3: The effects of task and trail version on post-task factors (RQ2) and search behaviors (RQ3).

Secondly, based on participants' perceptions, broad trails outperformed narrow trails in two respects. Participants reported higher information quality from the SG trails in the broad versus narrow trail condition. Additionally, task and trail version had a significant interaction effect on the extent to which the SG trails matched participants' expectations (Figure 3d). Specifically, for tasks that were perceived to be narrowly focused (I, B based on RQ1), participants' expectations were similarly met with both trail versions. Conversely, for broadly perceived tasks (U, D based on RQ1), participants' expectations were better met by broad trails.

RQ3: Our RQ3 results reinforce some of the trends mentioned above. First, tasks that included a dimension required more interaction (i.e., more search effort) in terms of the number of SG query clicks (U < D,B), result clicks (U,I < B), and total clicks (U,I < D).

Secondly, task and trail version had a significant interaction effect on the number of tab clicks (i.e., a surrogate of number of search trails explored). For narrowly focused tasks (I,B), the number of tab clicks were similar. Conversely, for broadly focused tasks (U,D), participants had fewer tab clicks with broad versus narrow trails. Put simply, our RQ2 and R3 results suggest that participants were better able to address narrow tasks with broad trails than broad tasks with narrow trails (i.e., broad trails are better).

Implications: Using search trails to support users requires making two important decisions: (1) deciding *when* to display trails and (2) deciding *which* trails to display. To help address the first decision, one important question is: How do task characteristics impact users' expectations about the search trails provided and their ability to gain benefits? To help address the second decision, an important question is: Should the system favor narrowly or broadly focused trails on the topic of a user's current search session?

In our study, we manipulated the scope of comparative tasks by specifying two items (I), one dimension (D), or both (B). Consistent with prior work [4], our results suggest that searching for items is easier than for dimensions. Put differently, searching for items made tasks more determinable (less complex), and searching for dimensions made tasks less determinable (more complex). Our results suggest that task determinability is an important criterion for deciding whether to show trails. For more determinable tasks (e.g., I vs. D), our participants were more confident about knowing

what the search trails might contain (RQ1) and reported better experiences interacting with the trails provided (RQ2). This result is somewhat paradoxical—during indeterminable (more complex) tasks, searchers may need greater support, but may be less able to gain benefits from search trails. Future work is needed to better understand this relationship. Perhaps search trails are most useful for tasks with a medium-level of determinability (not trivial, not overly complex). Alternatively, there may be trail characteristics or presentation strategies well-suited for highly indeterminable tasks.

Finally, our results have implications for deciding which trails to display. First, based on our results, the best alternative is to show trails with the same scope as the user's task—broad trails for broad tasks, and narrow trails for narrow tasks. Secondly, our results suggest that participants were better able to address narrow tasks with broad trails than broad tasks with narrow trails. As a design implication, if a system cannot infer the scope of a user's task, displaying broad trails may be the best choice.

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