Chapter 6

Summary View for Solution Synthesis

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While open online innovation platforms promise great benefits from a large number of ideas in the divergent phase of the creative process, these platforms pose a challenge during the convergent phase. Once they collect enough ideas, someone has to summarize generated ideas and synthesize a few solutions to pursue. The task of solution synthesis usually falls to people who organize ideation challenges, hired experts or representatives of the communities that use the platforms. We refer to people who synthesize solutions from collected ideas “synthesizers”. In this phase, the synthesizers develop general knowledge of the ideas (main categories of ideas and their distribution), identify promising ideas including those rare gems, and craft solutions from what they learn from submitted ideas. However, the large number of ideas with different levels of detail and clarity makes these tasks difficult. Synthesizing these ideas for a few solutions typically involves looking through all ideas; a long and tiring process that biases them towards common solutions instead of rare and creative ones. In this chapter, we propose using a summary view that helps synthesizers learn about main

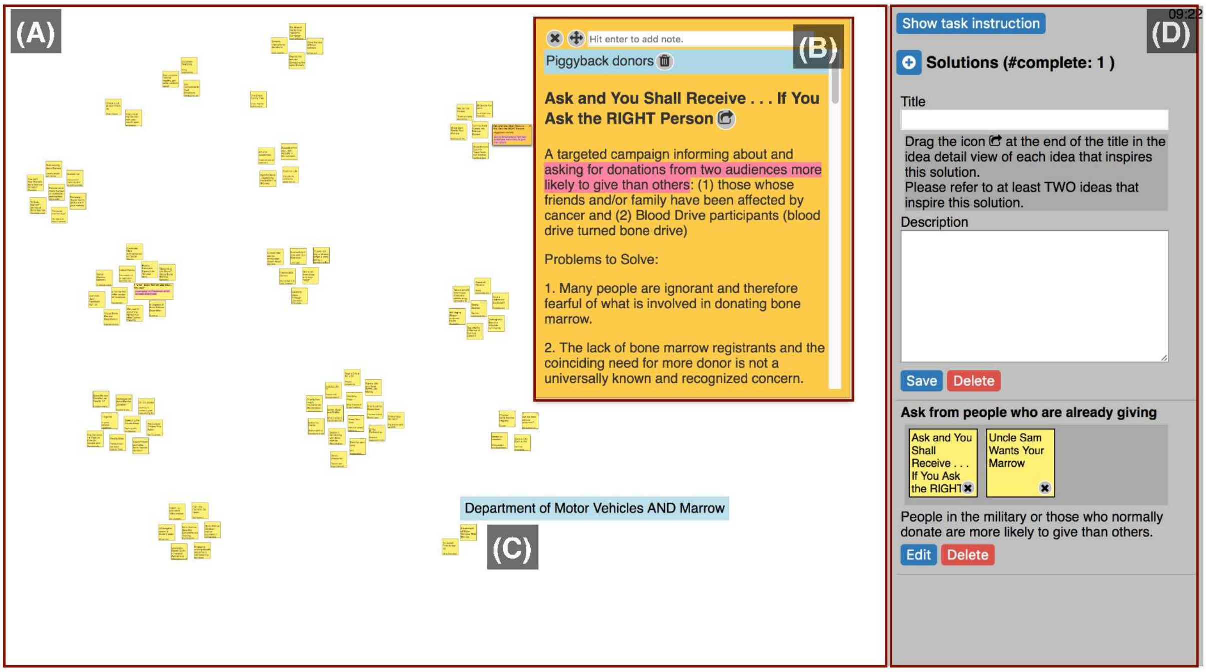

Figure 6.1: Screenshot of the synthesis interface. (A) A virtual whiteboard where seed ideas are positioned in group based on their similarities to one another. Users can drag an idea around to rearrange the layout. (B) Users can click on an idea to read the idea's full description. They can also make note about an idea (shown in blue boxes on the top of the detail pane) and highlight parts of an idea. (C) When users hover over an ideas, a tooltip with the idea's title pops up for a quick read. (D) Users write their solutions in this pane. They clicked on the add button to start writing a new solution. Each solution require a title, a description and at least two seed ideas. Users save a solution by clicking the Save button. The users can edit a saved solution by clicking on an Edit button. They can also delete a solution.

categories of ideas and spot rare and creative ideas. Our approach uses an *idea map*, as described in Chapter 4, to generate idea space and creates a summary view, a visualization that shows ideas in groups based on their similarities. This summary view (Figure 6.1) also presents small groups of ideas (rare ideas) as important as common ideas. However, the summary view might fixate the synthesizers on a single set of categories. We explore this tradeoff by conducting an experiment asking participants to synthesize solutions from sets of 87 ideas. Some participants were provided with a summary view manually generated by the researchers while some were provided a visualization of randomly positioned ideas. We found that participants with a summary view processed more rare ideas and integrated more rare ideas in their solutions but were fixated to the schema suggested by the summary view. There was no difference in the number of synthesized solutions. These results help inform the design of a future summary view that provides quick access to the general knowledge of the idea space and rare ideas while mitigating the fixation caused by the summary view.

6.1 Motivation and Contributions

Open innovation process does not end when all ideas are collected. The gathered ideas in their raw forms, albeit abundant in number, are not immediately usable. Some ideas are not complete solutions, lead to bad solutions or simply replicate many other ideas. The large number of ideas also makes it impractical to implement all of them. To extract value from the collective effort, synthesizers—usually experts or main stakeholders—evaluate the ideas, combine appropriate ideas together and generate a few polished solutions to pursue. We call this process "solution synthesis" and, for the rest of this chapter, refer to those responsible for this process as users.

Current solution synthesis involves looking through all ideas, comparing ideas against each other, evaluating ideas and synthesizing solutions from multiple ideas. This process requires a lot of time and effort from users. For example, Cambridge participatory budgeting 2016's idea synthesis took 60 representatives (Budget Delegates) 3 months to synthesize 20 solutions from 548 raw ideas[1]. The most time consuming part is understanding all ideas. Users can save time by comprehending a subset of ideas (e.g., the most popular ones or random ones). However, depending on the subset they select, they might overlook some promising rare ideas. With no knowledge of an overview of the idea space, the users have no way of identifying a

[1]http://pb.cambridgema.gov/pbcycle3

subset of ideas that allows them to gather important concepts while minimizing the time.

Existing platforms such as OpenIDEO[2] and MyStarbucksIdea.com[3] have used simple voting mechanisms to select ideas that are most popular. However, popular ideas do not always translate to solutions that are considered best by the stakeholders. For example, some ideas with high votes on OpenIDEO did not become winning ideas. It is therefore more useful for the synthesizers to get a holistic view of the idea space rather than narrow view on ideas with high popular votes. More importantly, these mechanisms might overlook rare ideas that are not seen by many and thus received fewer votes [Xu and Bailey, 2012]. A Budget Delegate from Cambridge participatory budgeting also told us in an informal interview that they ignored the popular votes of ideas and had to process all ideas anyway. To effectively synthesize solutions from a large set of ideas, the synthesizers need to be able to make senses of the emerging solution space and judiciously compare different possible solutions to one another.

One of the most time-consuming parts of solution synthesis for large-scale collective ideation is processing all ideas that are mostly mundane and redundant [Klein and Garcia, 2015, Bjelland and Wood, 2008]. In this context, an interpretative summary view that groups similar ideas together will save a user some time from repeatedly processing similar ideas. Further, prior work has suggested that a summary view that reveals schema of ideas improves a user's sensemaking [Russell et al., 2006, Fisher et al., 2012, Kittur et al., 2014], especially when the summary matches with the user's mental representation [Tversky et al., 2006]. The users can develop better understanding of the emerging solutions from the summary view and thus make informed decision about which solutions to pursue.

Prior work has explored aiding users in making sense of a large set of information by

[2]https://openideo.com/

[3]https://www.starbucks.com/coffeehouse/learn-more/my-starbucks-idea

providing a summary in different formats. Apolo provides users an interactive summary view that shows similar items grouped together based on the users' evolving mental model but is limited to network data such as paper citations [Chau et al., 2011]. Kittur et al. [2014] proposes a summary with attributes of items provided by previous users. Idea Spotter provides a summary of core parts of ideas marked by other users [Convertino et al., 2013]. IdeaGens uses a dashboard with a word cloud visualization of submitted ideas to summarize evolving solution space to support facilitating synchronous ideation [Chan et al., 2016]. Both Idea Spotter and IdeaGens did not give information about how ideas are grouped semantically and were limited to ideas expressed in text. Russell et al. [2006] and Gumienny et al. [2014] explore summary views that cluster similar items together visually. Grokker2 demonstrated the benefits of an interactive summary view that allows users to scan news articles quickly and move the around to reshape semantic clusters to fit their needs [Russell et al., 2006]. Qualitative findings from Gumienny et al. [2014] indicate that seeing how others cluster ideas and comparing them with one's own way of clustering can help provide different perspectives. These summary views however were genereated from inputs from a small group of users and automated methods instead of a crowd contribution.

Our approach is to leverage already derived idea map representation during idea generation to create a summary view that presents ideas in groups based on the ideas' similarities to one another. An idea map (Chapter 4) already has information about how ideas are related to each other and we can generate this summary view from an idea map by clustering similar ideas on the idea map together into groups. This summary view shows users an overview of main categories of the ideas. It also makes less common ideas as visually prominent as common ideas (Figure 6.1). The summary view suggests that rare ideas are worth inspecting as much as common ones and reduces the burden of inspecting a lot of similar ideas from the users. We therefore hypothesized that the users presented with an automated synthesis would be more likely to include rare ideas in their solutions than users working with no summary view. Further, because inspecting a summary view requires reviewing only a fraction of the ideas to make sense of each of the groups, we hypothesized that users working with the summary view would perceive lower task load than users reviewing raw ideas without any organization imposed on them.

However, there is a trade-off in this design. The summary view might fixate the users toward certain schemas or clustering of ideas [Barsalou, 1983, Nijstad and Stroebe, 2006]. Ideas are multi-faceted. There are usually multiple schemas or points of view to organize information [Barsalou, 1983, Gumienny et al., 2014, Chi et al., 1981]. By getting exposed to a single schema suggested by the summary view, the users might get fixated on that particular schema instead of trying to look at the solution space from different points of view. This is problematic because the users could miss some insights about the ideas that lead to good solutions.

We conducted an experiment to study this tradeoff. We asked 79 participants to synthesize solutions from ideas taken from a real ideation challenge. For each task, participants synthesized as many solutions as they could from 87 ideas using one of the two systems: with a summary view or with a visualization that positions ideas randomly instead of grouping them similar ones together. Our study measures how likely the participants would adopt rare ideas (ideas that have at most 2 ideas that share the same concept) to their solutions and whether participants with a summary view were fixated on the schema suggested by the visualization. Our results demonstrate that users with a summary view process and integrate rare ideas more than those without a summary view but also fixate more on the groups suggested by the summary view.

6.2 Experiment

We want to compare experience and behaviors of the users who were provided with a summary visualization of ideas to the users who were provided with a set of ideas with no summary view. The goal is to understand the potential trade-off of providing users with a summary visualization.

With a summary visualization, users do not have to create the schemas for categories of ideas by themselves. They would therefore have more time to synthesize new solutions. Our version of summary visualization also tells the users which ideas are rare or common. By featuring rare ideas in their own groups in a summary view, the users can identify these rare ideas easily. However, the summary visualization might fixate the users on the schema suggested by the summary when there are possibly other schemas that can help with synthesizing solutions.

Based on these arguments, we thus hypothesize:

H1: Users with a summary visualization have less task load and synthesize more solutions than users without it.

H2: Users with a summary visualization interact more with rare ideas as proposed by the visulization than users without it.

H3: Users with a summary visualization are fixated more on the categories suggested by the visualization than users without it.

6.2.1 Participants

We recruited 85 participants from Amazon Mechanical Turk (MTurk), an online micro-labor market. We limited recruitment to workers who resided in the U.S. and who had completed at least 1,000 HITs with greater than 95% approval rate. Participants were paid $3.75 ($9/hour) for their participation.

6.2.2 Task

Participants were asked to synthesize as many creative solutions as they could within 15 minutes. They were asked to synthesize the solutions from existing seed ideas that aimed to increase the number of bone-marrow donors. For each solution, a participant provided a title, a short description and a list of at least two seed ideas that inspired the solution.

6.2.3 Seed Ideas

We selected 87 seed ideas from 279 ideas submitted to an OpenIDEO's challenge on increasing the number of registered bone-marrow donors[4]. The quality of a summary view derived from an idea map depends on many factors such as the quantity and quality of human inputs and parameters of clustering algorithms. For this experiment, we decided to carefully control the quality of the summary view and grouped similar ideas manually. We selected seed ideas as follow. We read through all 279 ideas and, after filtering out ideas that were hard to understand without visual images or external links, clustered ideas into groups. From these groups, we selected 16 groups that represented most of the solution space without overlapping one another. We then further removed some ideas from some groups to create groups with fewer ideas . The list of seed ideas and their corresponded groups can be found in Appendix B.

We defined a rare idea as an idea that belongs to a group with at most 3 ideas. According to this threshold, there were 8 rare seed ideas making up 9.1% of all ideas.

[4]https://challenges.openideo.com/challenge/how-might-we-increase-the-number-of-bone-marrow-donors-to-help-save-more-lives

6.2.4 Procedure

Participants first read the description of the task and followed a tutorial that walked them over the interfaces they used to synthesize solutions. They answered a pre-task question that evaluated their self-efficacy in synthesizing solution: *"(On a scale of 1 being not at all confident and 7 being very confident) How confident are you that you can synthesize diverse and creative solutions from a large number of ideas generated by others?"*. Then, they read the description of the ideation challenge and spent 15 minutes synthesizing the solutions using the provided synthesis interface (Figure 6.1 or Figure 6.2). During these 15 minutes, participants wrote solutions based on seed ideas. They could hover over an idea to read its full title, click on an idea to open a window with its full description, write notes to idea, highlight text in an idea, and move an idea around the whiteboard. After they finished synthesizing solutions, participants answered questions about their experience.

At the beginning of the experiment, each participant was randomly assigned to one of the two conditions:

- *Summary*: Participants were initally presented with a whiteboard on which ideas were grouped together based on how similar they are to each other as shown in Figure Figure 6.1.
- *Random*: This is the baseline condition. Participants were initially presented with a whiteboard on which ideas were placed randomly (Figure 6.2).

6.2.5 Measures and Analysis

We conducted a between-subjects study with the two conditions as the sole factor on the following measures.

- *Number of valid solutions*. We counted the number of undeleted solutions with a title, a descrpition and at least two source ideas.

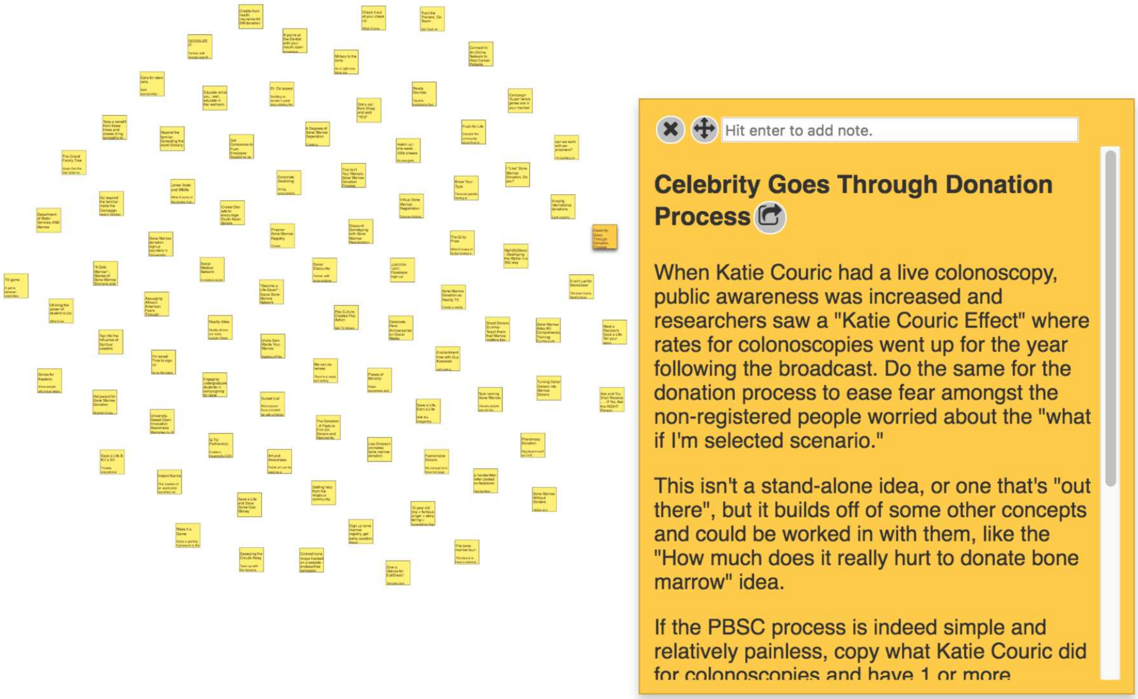

Figure 6.2: An example of the random intial positions of seed ideas on the white-board for the *Random* participants

- *Rare idea exploration.* We used the ratio of rare ideas over all ideas that participants hovered and clicked open and the ratio of rare ideas over all unique ideas that are integrated into valid solutions to measure their exposure to rare ideas.
- *Category fixation.* We used the ratio of valid solutions that cite seed ideas from more than one of the 16 groups that were presented in the *Summary* conditions over all solutions. The higher the ratio, the more likely participants synthesized ideas from more than one groups and signifies that participants were less fixated by the suggested grouping presented in the *Summary* condition.

We also collected participants' subjective response (reported on a 7-point Likert scale) to questions that related to their experience:

- *Self-efficacy* We compare the differences between pre-task and post-task self-efficacy in synthesizing solutions from a large number of seed ideas.

- *Perceived helpfulness of the initial positioning of seed ideas.* We asked participants to rate how helpful the initial positioning of seed ideas help them spot rare ideas and provide big picture (overview) of the ideas. We also asked how well the positioning match with their interpretation of the semantic similarities between ideas.
- *Perceived task load* We used the standard NASA Task Load Index (TLX) questions to measure workload perceived by the participants.

To reduce the probability of Type I error when performing multiple tests, we applied the Holm's sequentially-rejective Bonferroni procedure[Holm, 1979, Shaffer, 1995]. The procedure was applied separately to participants' subjective responses and separately to non-subjective performance measures (number of solutions, rare idea exploration and category fixation).

6.2.6 Adjustments to the data

We filtered out 4 participants who did not submit any valid solutions and 2 participants who submitted solutions that were not related to the the task.

We ended up with 79 participants: 41 in the *Random* condition and 38 in the *Summary* condition. 29 participants were female; 49 participants were male and 1 participant preferred not to identify themselves as either.

6.3 Results

We summarize the results for performance measures in Table 6.1 and the results of participants' subjective responses in Table 6.2. Table 6.3 synthesizes all results.

Measure (Hypothesis)	Grouped Mean (SD)	Random Mean (SD)	Raw p-value	Adjusted p-value
Number of valid solutions (H1)	3.26 (2.02)	2.98 (1.54)	0.4774	1.4322
Number of hovered ideas	54.03 (18.25)	55.49 (18.40)	0.7243	1.4486
Number of open ideas	19.29 (12.66)	19.39 (12.70)	0.9719	0.9719
Ratio of hovered rare ideas (H2)	0.0978 (0.0292)	0.0918 (0.0284)	0.3543	1.4172
Ratio of open rare ideas (H2)	0.1491 (0.1163)	0.0824 (0.0913)	0.0057	0.0285 *
Ratio of cited rare ideas (H2)	0.1721 (0.1852)	0.0767 (0.1040)	0.0052	0.0312 *
Ratio of solutions that cite ideas from different category (H3)	0.40 (0.43)	0.82 (0.29)	<.0001	<.0007 *

Table 6.1: Measures of participants' performance and interactions.

6.3.1 No substantial difference in the number of valid solutions

On average, the *Summary* participants synthesized 3.26 solutions (SD=2.02), while the *Random* participants syntehsized 2.98 solutions (SD=1.54). This difference is not significant ($F(1, 77) = 0.5097$, $p = 0.4774$). These results provide no support for H1.

6.3.2 No substantial difference in the number of hovered and clicked ideas

The *Summary* participants hovered, on average, over 54.03 ideas—62.10% of all seed ideas—(SD=18.25) to read the ideas' titles. The *Random* participants hovered over 55.49 ideas—63.78% of all seed ideas—(SD=18.40). There is no significant difference in the number of hovered ideas between the two conditions ($F(1, 77) = 0.1253$, $p = 0.7243$).

For deeper processing of ideas, participants could click on an idea to read its full description. On average, the *Summary* participants clicked open 19.29 ideas (SD=12.66) while the *Random* participants clicked open 19.39 ideas (SD =12.70). The difference of number of open ideas between conditions is not statistically significant ($F(1,77) = 0.0012$, $p = 0.9719$).

6.3.3 Participants from both conditions hovered over equal ratio of rare ideas but the *Summary* participants clicked open and adopted rare ideas in higher ratio to their solutions

Out of all hovered ideas by the *Summary* participants, on average 9.78% (SD=2.92) were rare ideas. This percentage is slightly higher than that of the *Random* participants with 9.18% (SD=2.84). The difference of ratio of rare hovered ideas between the two conditions is not statistically significant ($F(1,77) = 0.8685$, $p = 0.3543$).

In constrast, out of all *open* ideas by the *Summary* participants, on average 14.91% (SD=11.63) were rare ideas. The percentage is higher than that of the *Random* participants with 8.24% (SD=9.13). The difference of ratio of rare open ideas between the two conditions is statistically significant ($F(1,77) = 8.1059$, $p = 0.0057$).

Likewise, out all ideas that the *Summary* participants cited, on average 17.21% (SD = 18.52) were rare ideas. The percentage is higher than that of the *Random* participants with 7.67%(SD=10.40). The difference of ratio of rare cited ideas between the two conditions is statistically significant ($F(1,77) = 8.2728$, $p = 0.0052$).

These results provide support for H2.

6.3.4 The *Summary* participants fixated more on category suggested by the visualization

On average, the ratio of solutions that cite ideas from different groups over all solutions for participants in the *Summary* condition is 0.40 (SD=0.43), which is significantly lower than those of participants in the Random condition (0.82, SD=0.29). The difference between

Measure	Questions	Grouped Mean (SD)	Random Mean (SD)	Raw p-value	Adjusted p-value
Difference between pre-task and post-task self-efficacy	How confident are you that you can synthesize diverse and creative solutions from a large number of ideas generated by others? (Report increase of the post-task response from the pre-task response)	0.03 (1.91)	0.49 (1.57)	0.2426	1.4556
Perception of helpfulness of the initial positioning of seed ideas	Q1: How much of the big picture of ideas you got from this session?	5.71 (1.18)	5.20 (1.14)	0.0528	0.4224
	Q2: How helpful the system was in helping spotting rare ideas (ideas that have concepts that are shared by no or few other ideas)?	5.26 (1.64)	4.15 (1.86)	0.0061	0.0549
	Q3: How well does the initial positions of ideas on the whiteboard match with your interpretation of the semantic similarities between ideas?	5.50 (1.43)	3.51 (1.69)	<.0001	<0.001 *
Perceived workload	Q4: How mentally demanding was the task?	5.82 (1.14)	5.54 (1.25)	0.3026	1.513
	Q5: How physically demanding was the task?	2.05 (1.54)	2.12 (1.49)	0.8393	0.8393
	Q6: How hurried or rushed was the pace of the task?	5.32 (1.56)	4.68 (1.63)	0.0829	0.5803
	Q7: How successful were you in accomplishing what you were asked to do?	4.76 (1.24)	4.88 (1.25)	0.6830	1.366
	Q8: How hard did you have to work to accomplish your level of performance?	5.84 (1.03)	5.66 (1.17)	0.4635	1.854
	Q9: How insecure, discouraged, irritated, stressed, and annoyed were you?	3.42 (1.97)	3.19 (1.66)	0.5820	1.746

Table 6.2: Participants' subjective responses. The *Summary* participants found the initial positioning of ideas matched with their interpretation of the semantic similarities between ideas significantly more than those in the *Random* condition.

the two conditions is statistically significant ($F(1,77) = 25.8180$, $p < .0001$). This means that participants in the *Random* conditions are more likely to propose solutions that got inspired by ideas from different groups suggested by the visualization seen by participants in the *Summary* condition. These results provide support for H3.

6.3.5 No substantial difference in the difference between pre-task and post-task self-efficacy

On average, the self-efficacy after the task increased by 0.03 (SD=1.91) for participants in the *Summary* and 0.49 (SD=1.57) for participants in the *Random* condition. There is no significant difference between the two conditions ($F(1,77) = 1.3867$, $p = 0.2426$). See the adjusted p-value in Table 6.2.

6.3.6 Perceived helpfulness of the initial positioning of seed ideas

Question Q1 to Q3 in Table 6.2 measured participants' perceived helpfulness of the initial positions of seed ideas. We found no significant difference in perceived helpfulness in providing overview of the ideas across conditions. We found no significant different in perceived helpfulness in spotting rare ideas after applying the Holm's Bonferroni correction (adjusted $p = 0.0549$). However, participands in the *Summary* condition reported that the initial layout matched their semantic similarities mental model significantly more than the *Random* participants ($p < .0001$, adjusted $p < .001$). These results provide partial support to H2.

6.3.7 No substantial difference in perceived task load

Question Q4 to Q9 in Table 6.2 measured the participants' perceived task load while synthesizing ideas. We found no significant difference of perceived mental demand, physical demand, temporal demand, performance, effort and frustration. These results provide no support for H1.

6.4 Discussion

6.4.1 Number of synthesized solutions

We initially hypothesized that the *Summary* participants would synthesize more solutions than the *Random* participants. The former did not have to construct the schema of the solution space from scratch so we had expected the *Summary* participants to have more time to focus on synthesizing ideas. However, our results show no differences in the number of synthesized solutions across conditions. Further inspection on the length of written solutions also show no differences across conditions on how much the participants wrote and how many

Hypothesis	Measure	Hypothesis supported
H1	No substantial difference in the number of submitted solutions	-
	No substantial difference in perceived task load	-
H2	No substantial difference in ratio of hovered rare ideas	-
	The Summary participants inspected higher ratio of rare ideas than the Random participants	Yes
	The Summary participants cited higher ratio of rare ideas than the Random participants	Yes
	No substantial difference in perceived helpfulness in providing an overview of the ideas	-
	No substantial difference in perceived helpfulness in spotting rare ideas	-
	The Summary participants reported the initial idea layout matched their mental model more than the Random participants	Yes
H3	The Summary participants submitted lower ratio of solutions that cite ideas from different categories	Yes

Table 6.3: Summary of performance measures and subjective responses for each hypothesis

idea sources they cited per solution.

One explanation is that participants in both conditions were equally pressured by the time limit and had to distribute the time accordingly. This corresponded with the survey results where participants from both conditions reported that they were equally rushed. We set the time limit to 15 minutes so that participants felt slightly rushed even though they only had 87 ideas to explore instead of hundreds. Participants had to make a trade-off between exploration, deciding on the solutions to pursue and writing the solutions. An experiment with longer time limit might reveal a more informative picture of how participants balance these activities.

6.4.2 Discovering rare ideas with a summary view

The results demonstrated that a summary view that shows ideas grouped semantically helps users spot rare ideas that they might overlook otherwise. The *Summary* participants clicked open rare ideas more than the *Random* participants even though both initially hovered the same ratio of rare ideas. These results suggested that the *Random* participants were not aware that an idea was rare when they hovered over it and thus did not click on them to process them further. By presenting rare ideas in their own clusters, our summary view makes it easier for users to spot uncommon ideas which can lead to creative solutions.

6.4.3 Fixating on categories suggested by the summary view

We asked participants to cite at least two ideas for each solutions. Citing ideas from different groups implies that the participants find commonality (semantic similarities) between the ideas that were not grouped together in the summary view. Our results show that the users with a summary view synthesized fewer solutions with cross-group ideas as predicted by prior work on cognitive fixation [Nijstad and Stroebe, 2006, Kohn and Smith, 2011]. Seeing a summary view that shows only one point of view can prevent participants from synthesizing solutions that could have been derived from an alternative view. For example, a participant submitted a solution "Mandatory Donation" that proposed making the donation mandatory for people who are already giving, such as military officers and blood donors, but the participant did not propose a solution with another aspect of the seed ideas in the groups that proposed demystifying the donation process.

One approach that might mitigate the schema fixation effect is to expose users to different schemas. Instead of showing just only one way to categorize ideas, a summary view can show multiple ways to group ideas semantically. Building on our approach to infer semantic relationships in Chapter 5, we can leverage different ways IdeaHound users group ideas to generate multiple idea maps instead of simply aggregating them to generate a single idea map. For example, we can apply a machine learning algorithm to identify different types of users based on how they cluster ideas on the whiteboard and then generate an idea map for each type [Kairam and Heer, 2016] or derive a latent factor model to learn similarity functions of ideas for a user population [Yue et al., 2014]. The latter approach also supports personalized clustering inferences where the algorithm tries to predict how the users will cluster ideas based on how they cluster a small subset of ideas. This approach could help users to gradually develop a schema that fits with their mental models while also offering alternative perspectives.

We also note that fixation on categories might not necessarily be harmful, especially during the convergent phase of the ideation process. Focusing on a few categories presented could ease the decision making process and give the synthesizers more time to prototype and test the solutions they generate. Future work could explore the benefits and setbacks of category fixation during the convergent phase.

6.5 Conclusion

In this chapter, we explored a summary view interface that helps synthesizers synthesize solutions from a large set of raw ideas. We presented an experiment that studied the trade-offs of the proposed summary view. Our results demonstrated that the summary view helps users find rare ideas but it fixates users on certain schemas. We discussed this trade-off and proposed alternative solutions to defixate the users while still retaining the benefit of the presented summary view.