

## Paper Summary

The paper demonstrates a comprehensive self-experiment setup, its merits and challenges in assessing triggers in patients suffering from irritable bowel syndrome (IBS). The findings from this paper can be generalised to develop systematic experiments for other such chronic disorders that may require qualitative assessment. Table 1 summarises the design choices for conducting this experiment and what the evidence from the results suggest about them.

Table 1 Tummy Trials Experiment design set up and comments on the design choice from the findings of this study.

	<b>Design Choices and reasoning</b>	<b>Evidence from findings and results</b>
<b>Experimental Setup</b>	Goal : Make design wizard somewhat manageable. Control the independent variables.	Any ‘in the wild’ studies are prone to failures and an iterative design is warranted.
	Supports the top seven Symptoms of IBS.	Some participants wanted to track an unlisted symptom, for eg. One of the participants used replaced abdominal pain with migraines.
	Four categories of food to be considered as trigger. Used a dietician to help plan meals on control (when you don’t intake the trigger) and consume (when you intake the trigger) days.	Some participants reported this helped in simplifying the task and help in their adherence while a few other complained of monotony in their diet which led them to be non-compliant in some cases.
	Time of assessment - Breakfast	This was a socially non-interfering meal of the day hence, made a good option. Although a few participants wanted to test non-breakfast friendly food like beer/wine as triggers. Some other complained that they did not like their morning routine disturbed with breakfast trials.
	Randomly assign consume and control days over a span of 12 days with a constraint that both categories are balanced.	In some cases if the consume day is assigned consecutively and the food item is indeed a trigger it causes a lot of discomfort in the participant.
<b>Execution and Data collection</b>	TummyTrial app installed in participant’s phone and study is explained to the user. Attempt to improve user literacy in conducting self-experiment.	Participants were happy with the reminders for logging data and liked the low-burden app prompts over the more traditional food-journaling methods. Ranked 22% higher than the threshold in system usability survey(SUS).
<b>Analysis</b>	Used the timeline and trend plot to give a more informed visual indicator and a sentence (“Based on the self-trial there is (strong/possible/weak/no) that your (symptom) gets worse if you consume (trigger)”) summarising their result.	No consistent consensus on what other visual indicators would add value to the participant’s interpretation.
<b>Procedure</b>	Screening : Recruitment of participants, install app, IBS symptom severity score(SSS) Complete 12 days of experiment: Prorated compensation, IBS SSS, SUS etc. Exit Interview	Some participants were not comfortable with the recording and transcribing of interview.

Overall the experiment was successful with 12 out of the 15 participants complying to the protocol 100%. Some key takeaways for such analyses are:

- It is valuable to bring in the corresponding health-care provider in loop to make interpretation from self-experiment data more meaningful.
- Improve participant literacy about system to allow flexibility in reporting and measurement without deviating a lot from compliance.

## Things I liked about the paper

The paper highlights that in qualitative studies, error can arrive from misinterpretation of results and underlying statistics known as Type B error. Unlike sensor/data based engineering errors, such errors are more speculative in nature and are hard to identify.

## Areas that need improvement or clarification

In the procedure of the experiment the purpose of exit interview is not very well explained. Majority of the 'diagnosis' elements of the study are covered in the IBS scores, usability scores and questionnaire. The value in conducting an additional exit interview especially when some participants have expressed unwillingness to be recorded under interview-setting is not clear.