

Overview of the process

This paper will be due on Monday of week 8 (Nov 14th) instead of Monday of week 7.

You have just finished an experiment where you were the subject. Now you have the task of sorting it all out; “What does it mean?” and “What have I learned?” are the questions that you will try to answer. It is often helpful at this point to outline the overall process.

1. You set out to establish a baseline of data—“normal”—by taking daily observations on yourself in several different categories:
 - How your body felt
 - Amount of sleep and energy levels
 - Level of activity
 - Daily diet and waste elimination
2. After two weeks of recording this data, you changed your eating habits to examine the influence of a different nutritional plan on you and your daily experiences.
3. After two weeks of this new nutrition plan, you’re done with the experiment (whew!) and data recording (hoorah) and are faced with figuring it all out.
4. Somehow you need to condense your experiences and observations down into the most salient aspects and see if any patterns emerge and then write up a paper summarizing your experiment.
5. This process can be divided into several phases:
 - a. Summarizing your data and observations
 - b. Sifting your summaries for patterns and formulating explanations for these patterns. Take notes!
 - c. Writing your report on your experiment

Summarizing data and observations

For the sake of convenience, *normal period* will refer to the initial two weeks of observations and *experiment period* will refer to the two weeks where you were following a different nutritional plan.

It’s helpful to begin with a clear statement of exactly what you were investigating, “I set out to determine the effects of the Twinkie diet on my energy levels and daily experience.” Notice that this statement is somewhat vague. Since you didn’t have access to sophisticated test equipment (and most people don’t), you were evaluating the influence of nutrition on your personal experience in a qualitative manner. This is how we evaluate many of the different experiences we encounter through much of our lives. You have collected a great deal of qualitative data as part of this exercise, as well as some quantitative data. The steps involved in sorting it out are:

1. Summarize your observations and input/output data from the “normal” period.
2. Summarize your observations and input/output data from the experiment period.
3. Examine each set of observations and data for any patterns;
4. Compare and contrast the “normal” and experiment summaries to see if any patterns exist. As part of this process, you will need to create comparison tables which compare relevant information from the normal and experiment periods.
5. Explain the patterns you see in your data—tell the story that your data illustrates (using your data for support where appropriate).

Creating summary tables

One helpful way to figure out how to summarize all these observations and data is to make a series of interim tables, which will sort your notes and observations into categories to facilitate comparisons. The overall goal of making these tables is to allow you to calculate averages for the normal period and for the experiment period. These tables will be included only as appendices and can be handwritten or done on a computer, whichever is easier for you. Here's an outline of the steps.

1. Create a table where you list the minutes of activity per day for each day of the normal period. If your activities vary considerable in exertion level, create appropriate categories of exertion. Calculate the average amount of physical activity per day per category for the normal period.
2. Create a similar table for the number of hours of sleep per day for the normal period.
3. Compile all of your nutritional intake data for the normal period and calculate your daily nutritional intake (express all your data as calories and percentages to facilitate comparison; so calculate total calories eaten for each day and percent of total calories contributed by carbohydrates, fat, protein). From this data, calculate your average daily nutritional intake for the normal period.
4. Create another table that summarizes your waste output (minimum would be movements/day and time of day) for the normal period.
5. Repeat steps 1-4 for the experiment period. This means that you will be making a total of eight tables (four normal and 4 experiment).
6. The most challenging data to summarize will be the observations from the *State of your body* part of the exercise. Look at your observations from the normal period. Summarize your observations about how your body felt during this time in one or two paragraphs. Repeat this for the experiment period.

Sifting for patterns by creating comparison tables

Now that you have created all these summary tables, you are ready to “read the story” that is there. You will now create comparison tables which will be included in the text of your report.

Since you were manipulating your nutritional intake, this is the obvious place to start. Begin by comparing the comparable data tables for the normal and experiment periods. Create a comparison table that compares your average daily nutritional intake for the two periods. Discuss the differences and similarities between the normal and experiment period (this will go into the *Results and Conclusions* section of your report).

Repeat this process for the other quantitative data that you recorded (physical activity, sleep, waste movements).

Compare your qualitative observations for the normal and experiment periods. Do you notice any differences? What you are trying to accomplish here is to see if there were any changes associated with your change in nutrition (“You are what you eat”). In order to reach any conclusions, you need to filter out other variables, such as physical activity and amount of sleep, both of which could have significant impact on your energy levels and how your body feels.

Begin by looking at the summaries that you wrote for each period. Look at the daily variation in your energy levels and how your body felt. How much of this variation can be explained by the variation in your daily physical activity level or amount of sleep? Whatever variation can't be explained by activity and sleep may be due to nutritional intake. What story is there? As you outline the story (negative results are also a story), use the comparison tables or summary tables to support your story.

Writing your report

Your report should be typed neatly in a 12 pt serif font (e.g Times Roman, Palatino), single-spaced (to conserve paper) with one inch margins. We expect that the average paper will be from 3-5 pages excluding appendices. It should be divided into at least the following sections. You may choose to have additional sections.

- Introduction

- Methods
- Results and conclusions
- Future directions
- Appendices

Introduction

Begin your report with a clear statement of what you were attempting to determine. Outline the particular nutritional plan or strategy that you set out to investigate and why you chose this particular one. Be sure to include a comparison of caloric and nutrient intake for the normal and experiment periods, as well as any predictions/expectations you had for the nutritional plan.

Methods

Describe the process and methods that you used to carry out your experiment. This will be your particular implementation of the process describe in the *Lifestyle Awareness* handout and elaborated upon in class discussions/lectures. Don't go into infinite detail here, but give enough details here so that the reader could duplicate your process (with perhaps a little interpretation).

Results and conclusions

This is the main part of your paper. Begin with a summary of your observations for each period. Compare/contrast this with your expectations. Discuss the patterns you observed in the data and include data tables (or graphs if you wish) that illustrate the story. Any tables or graphs should include a title and should help clarify your story. Keep them simple; complex tables with many rows and columns are difficult to interpret. Present each part of your story and discuss your conclusions about it. For example:

“In general, my energy levels were lower while I was on the Twinkie diet. Although my overall caloric intake was higher than normal (3200 calories compared to 2500 calories, see Table 1), most of the calories were in the form of sugars and fats with very little protein. My low energy levels were most likely due to the fact that I was getting only 20 grams of protein per day (Table 1), much less than the amount I need (75 g/day, www.proteinneeds.com). I also noticed that my muscles ached more while on the Twinkie diet, perhaps also due to lack of protein since my physical activity level remained fairly constant (Table 2).

Another significant change occurred in my bowels movements which decreased significantly on this diet, from an average of 2 per day, to one every three days. The lack of fiber in the Twinkie diet was most likely the cause and this decrease in elimination probably also contributed to my general feelings of lethargy and muscle fatigue.”...and so on...

Conclude this part of your paper with a paragraph or two that discuss what sort of process skills you learned during this study. What do you now know that will be useful in creating any future studies? Have you learned anything about the scientific method? Use this as a segue into the next section.

Future directions

In this section of your paper, you discuss the various questions that were raised by your study. You can also suggest how your study might have been improved, what other studies need to be done or data collected to further explore the questions that you now have. Identifying needs for additional information is one of the most useful aspects of any study.

Appendices

Include any of the summary tables you created. Neatly handwritten tables are acceptable in this section.