

CSE 440

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Contextual Inquiry Report

Nutriview

Team Members

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Problem & Solution Overview

Eating healthy is important, but can be difficult. We hope to help people overcome two main challenges associated with healthy eating: first, the challenge of analyzing the healthiness of their current diet, and second, the challenge of selecting healthy foods. Nutriview will help people analyze their diet by automatically logging food consumption, and providing users with a dietary analysis. Nutriview will promote healthy food choices by providing useful and unobtrusive recommendations when users are deciding between foods. By helping people analyze their diet and choose healthy foods, Nutriview can make eating healthy an easier goal to achieve.

Participants

The objective we had in mind when choosing participants for our contextual inquiry was to understand the processes that different types of people go through when making decisions about what they eat. In order to provide the best possible spread of data, we opened up our target demographics to include a wide range of people, not just limiting it to those that specifically care about nutrition. As much as possible, we wanted to find people who differed in social standing, gender, eating behavior, and health habits. To make sure that we found people who eat out and who eat at home, we visited both a grocery store, and an area with food trucks. We also wanted data samplings from people that had some sort of dietary restriction, as these people have special processes they go through when selecting the food they eat. Aside from looking for these kinds of people, we simply aimed to talk to as many participants as possible in order to get the best idea of the general processes that people go through, and also to give us the best chance of running into people that have specific dietary needs (since this is not something we can outwardly observe).

Our first participants were an older couple browsing the sausage section of the grocery store. This couple often shops for ingredients to cook meals at home; in fact they say six out of seven times they eat meals at home. For this particular grocery trip, they were selecting sausage to be used in a sausage lentil soup. They often shop for ingredients that they are lacking at home that are needed for whatever they plan to cook. Here our intention was to understand how people select between different choices of the same produce, so as they were making their selection between the sausages, we requested an explanation of their choice.

We also talked with a male college student selecting a cut of steak to cook. He stated that the steak was for a meal for him and his sister, which was decided on a spur of the moment choice. His sister is currently on a diet, which includes no carbohydrates, so he has to be selective about what he decides to cook for meals; steak and broccoli was today's decision. Foods like meat have many varieties of quality and flavor even among the same kind of meat, so we wanted to explore how people make decisions based on these parameters, or if they have other parameters in mind when choosing food such as meat.

Many people we talked with were shopping for only a few items, but our next participant with whom we talked with over the phone was an older mom that makes grocery lists and buys many items in a single trip, not just for one meal. This woman cooks at home over 90% of the time, and has many preferences when it comes to choosing food and ingredients. Some of her parameters for quality ingredients were taste and healthiness, which she judges based on prior knowledge and reading the nutrition labels. She also avoids certain foods in general such as processed foods, fried food, and milk. In addition, due to her high cholesterol, she further avoids foods like eggs and seafood. From this interview we aimed to learn more about how shoppers make many decisions on a single trip to the store, as well as what kind of processes one must go through if dietary or health restrictions come into play.

Finally, we talked with a man in his mid 30s whose son has a peanut allergy. This man eats out for around half of his meals, and if his son is with him he has to be very careful to avoid foods that have any kind of peanut content in them. For times when his son is not with him (such as when we talked with him), he likes to try new places that he thinks are convenient, have short lines and good prices. Grocery shopping for his family occurs 3-4 times a week, with the list being whatever is needed for the meal he plans to cook. He has to be aware of what he is buying and always checks ingredient labels for foods he is unsure about. Here we wanted to understand the processes that people with allergy-related food restrictions go about so that we can understand how they make safe decisions on what they eat.

We interviewed many other people, however they generally fell within one of the above cases when it came to the processes they take to select food.

Results

Shared Parameters

As we talked with people, it quickly became apparent that many people have similar parameters in mind when shopping for food or choosing a meal when eating out. Especially for those people we talked to that were eating out, convenience was a major factor when it came to deciding what to eat. People prefer something close by and easily accessible; this goes for both shopping in general and eating out. Many people, whether they claimed to be health-nuts or not, also took nutritional value into consideration when selecting what to eat. For example, the older woman we talked with over the phone likes to select foods that are rich in vitamins or good for digestion. However, most people do not read nutritional labels while buying food. Instead, they seem to seek out foods that they think are healthy, and avoid foods they think are unhealthy.

Eating Behaviors

We saw that people's eating behaviors fall into two general groups: people who cook at home for the majority of their meals, and people who dine out for the majority of their meals. People who cook for the majority of their meals have a very meal-centric approach to how they choose their food. They tend to have a list of ingredients they are seeking out, and visit the grocery store and then choose between various options for each ingredient until they have all of the necessary components for their recipe. People who eat out for the majority of their meals choose their eating locations based on convenience, proximity, price, and quality.

Dietary Needs

More often than not the people we interviewed had some sort of dietary restriction, be it for health, religious or other reasons. These kinds of people have to make different choices when it comes to selecting the food they eat, and from what we observed, many of these people simply use their common knowledge of food to avoid eating something they should not. For example, a few participants strictly avoided eating pork or beef, and they avoided eating said foods simply by observation. Others that had more specific restrictions, such as an allergy, tended to find out if a food item had specific ingredients by asking. One interesting case of this type of process was when we interviewed a woman with a cherry allergy who also avoids eating pork. In the same

way she'd ask about cherries in a food item she is unsure about, she pretends to have a pork allergy when asking to make sure that what she is eating is okay.

Tasks

Viewing nutrition analytics for a day's worth of consumption

Most of our participants had only a general idea of whether or not their diets were healthy, and did not actually perform the task of thoroughly analyzing how healthy their diets actually were. This likely stems from the fact that analyzing a diet is a difficult, time-consuming and complex task for ordinary people. The task of dietary analysis involves tracking all foods that have been eaten, and also involves processing information about all of those foods' nutritional content. Most people aren't willing or capable of performing that type of rigorous dietary analysis on themselves. However, people who desire a healthy diet, such as many of the participants in our study, would likely benefit from viewing a nutritional analysis of their own diet. They already have specific ideas about what they'd like to include in their diet: for example, some wanted to make sure they were eating enough fruits, nuts, vegetables, protein, vitamins, organic foods, etc. They seem to perform a mental analysis of their diet and then determine whether or not their diet is healthy based upon their knowledge of nutrition, foods they've eaten, and those foods' nutritional content. This informal process of judging one's diet may not be completely accurate or reliable. Our tool will enable them to accurately and easily determine whether their own diet is adequate in different nutritional areas. Using our tool, users will be able to perform the task of rigorously analyzing their dietary intake, which will help them accurately judge the healthiness of their diet.

Choosing ingredients for a meal at a grocery store

Five out of the six customers we observed at the grocery store were buying items to cook for a meal they had in mind. Buying ingredients for a meal is a very common task that almost all of our participants performed frequently. The meals are usually for themselves, their family, or their guests. Sometimes they buy ingredients for multiple meals. The grocery shoppers usually have a specific meal in mind before arriving at the store and a list or idea of the ingredients needed. At the store, they then choose between multiple options for those ingredients. They select ingredients based on quality, price, healthiness, and dietary restrictions. They choose between different brands and stores and are often loyal to particular brands and stores which provide high quality products. For most shoppers, nutrition and healthiness of ingredients are less important factors than quality, price, and dietary restrictions. While shopping and buying food, many people pay close attention to price labels, but they do not tend to examine nutrition labels at all.

The only time they examine the nutritional label is when they or a family member has a dietary restriction such as an allergy to a particular food. Nonetheless, they do keep nutrition in mind when selecting ingredients and tend to seek out foods that they know have certain nutritional properties. Our tool will assist users in the task of choosing between multiple options of an ingredient for a meal. It may take into consideration user preferences such as quality, and price, but its main focus will be to help users choose between options based on their healthiness and nutritional content.

Selecting a menu item at a restaurant

Of the participants we observed at the food trucks, five out of six ate out over fifty percent of time, and three ate out for seventy percent or more of their meals. These people select items from restaurant menus on a daily basis. When choosing where to eat out, people take into consideration quality, convenience, price, wait times, familiarity, proximity, healthiness, dietary restrictions, and recommendations from friends or online sites such as Yelp. For the people we observed, convenience and proximity tended to be the most important factors when determining where to eat; people seek out locations that are nearby and fast. While eating out, many people try to make health-conscious food choices. They seek out foods with particular nutritional content, such as fruits, low-carb foods, and natural foods, and avoid foods they believe are unhealthy, for example, fried foods, processed foods, or sweets. They do not tend to view the nutritional information of the meals they purchase, even if it is available. They use their own general knowledge about food and nutrition to choose healthy options when eating out. However, people with allergies or dietary restrictions pay close attention to nutritional information about the meals they buy. They often inquire about the food content of menu items. Our tool will help users in the task of choosing between menu items at a restaurant. It may take into consideration user preferences such as quality, convenience, or ratings, but it will primarily assist users in assessing the nutritional content and healthiness of the items they purchase, so that they can eat healthier while eating out.

Sketches

Nutrition Analytics Screens

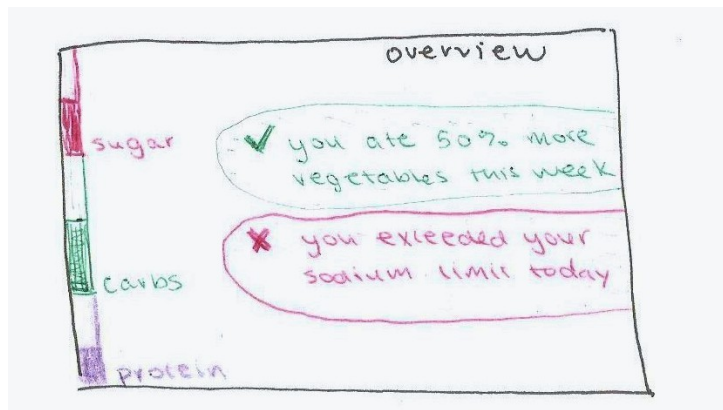


Figure 1a: Nutrient notifications and nutrient bar chart

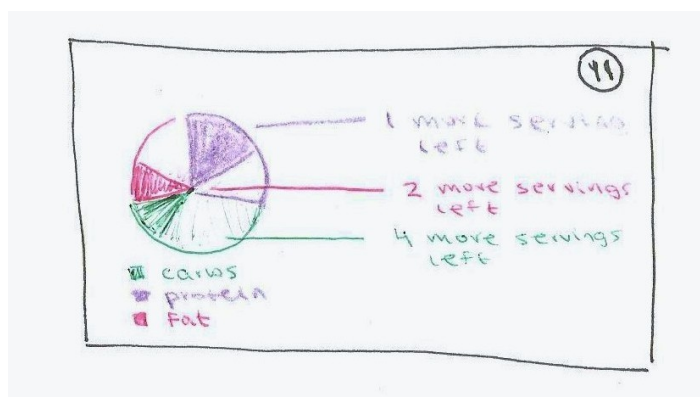


Figure 1b: Breakdown of nutrients and remaining servings

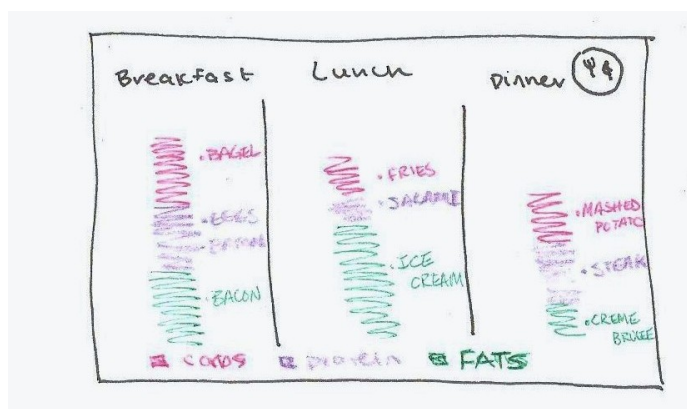


Figure 1b: Breakdown of nutrients by meal

Grocery Help Mode

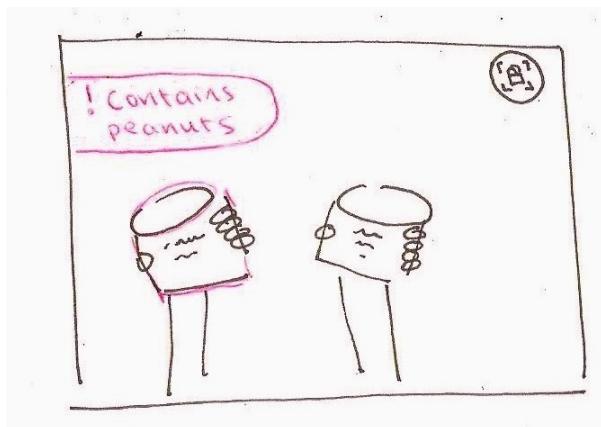


Figure 2a: Choosing Between two items



Figure 2b: Choosing a cereal. Red overlay indicates poor choices, green overlay indicates good choices.

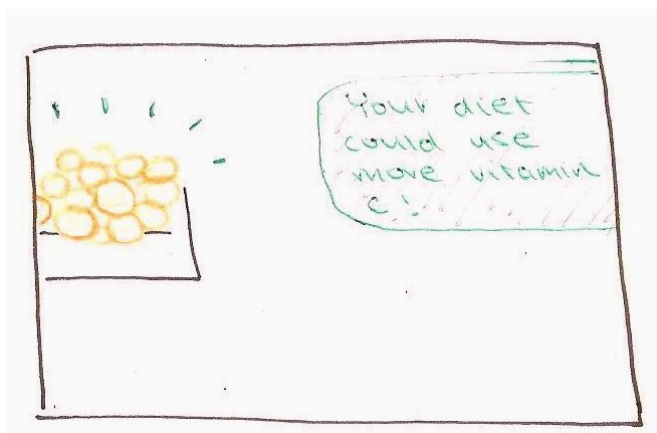


Figure 2c: While walking through a grocery store, the user receives a personalized food suggestion.

Restaurant Help Mode



Figure 3a: User receives a suggestion to visit a restaurant while walking down street.

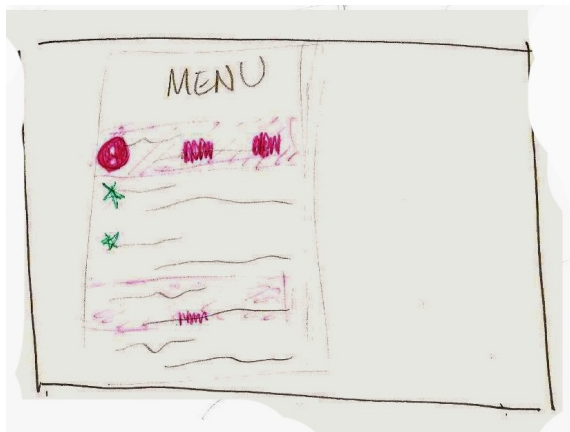


Figure 3b: Overlays on menu indicate which items are good or poor choices, and notifications for dietary restrictions.

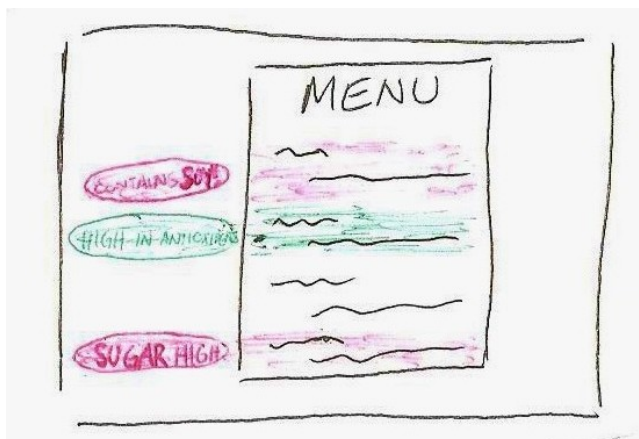


Figure 3c: Textual nutritional information about the content of menu items.