# ASSIGNMENT 3

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**a) Problem**

Do gender differences account for a difference in the way people give directions. Is it more explicit in one case than the other? Can differences really arise in giving step-by-step instructions for accomplishing the same task? Does the difference in thinking arise due to the language men and women think in and the frequency and type of linguistic markers they use while thinking and while explaining?

***-- Motivation --***
Hyundai recently introduced a virtual football game at one of their tech expos where the participants wear headsets and use only their mind-power to guide the ball towards the other goal, the objective being of course to score and win. Though I am not sure what cognitive science lies behind this idea, I thought it would be interesting to analyse how men and women performed on a comparative basis? I have often noticed females(my mom, sister, friends etc.) giving directions in a way which is quite different from the way males give directions. So, can this difference in thinking, the differences in focus points be due to the language we think in or the language markers we tend to pay more attention to? Can these differences help us know more about the two genders as a whole(their internal neural structure) or help us in developing robots(to be able to specify the frequency of the type of markers to consider while trying to accomplish self-driving and much more). *The possibilities could be endless and something in the interest of people from various fields.*
The basic idea is to analyse the language we think in and check for gender differences.

**-- Variables --**
Social variable : Gender
Linguistic variable : Frequency of markers and keywords(described later)

**b) Data collection**

**-- Hypothesis --**
The hypothesis is that women more explicitly describe specific objects and are thus able to approach the same location from a different start point and are more subject to

change while men tend to focus more on bigger landmarks and thus find it difficult if the picture they set in their mind. Focusing more on linguistic grounds, the markers used by men are much bigger landmarks while the ones used by women are certain small objects of detail. Thus, men tend to explain the route to the same location in a more concise manner than women(who tend to give a lot of instructions like, at the traffic signal, turn right...while men would say from say, road ‘a’, move towards landmark ‘x’) and thus end up taking a long time to actually explain the route. For example, my mom would focus on things like a small bus stop sign or say, a small shop while trying to recall a location we don’t often travel to, but my father would focus more on bigger landmarks and thus ends up asking more questions from passers. Or, if we have to take a left turn onto a certain street, while my dad would try to remember the street number we turn, my mom would look at a marker, say the street which has a particular dustbin on a side. (*The hypothesis here is a very weak one and can be even ignored as it is restricted only to my personal scope, my family and friends and I can find exceptions in my own self because I relate more to my mother in remembering directions.*)

**(i) Choosing subjects**

I would choose about 60 women and 40 men, who are adults and drive frequent enough(they shouldn’t people who just learnt driving but do not drive or are scared of driving, though i would like to specifically see how new drivers see things, but that would be part of another study). All the subjects will be chosen from the same locality to easily compare the keywords and to deal with the inconsistency of the existence of landmarks and signs. The region will be chosen according to a location and the presence of sufficient markers of all kinds(useful for this study). The drivers should of course be sound enough and restricted to the 20-35 year age group to not contaminate the data in this study with differences in age.

**(ii) Sample size**

I will choose 60 women and 40 men. I could do with equal number of subjects from both the groups but I can do with 40 men. The reason I would like to look at more women is that remembering bigger landmarks is something more natural where I expect fewer deviations between subjects. In order to justify my hypothesis that women look at more smaller details and are more explicit in giving directions, it is required that I look more closely at women because more variations are expected and a larger sample size would enable to average out these variations more easily. The sample size of 100 in my opinion is enough to come to a conclusion. Basically, I need sufficient number of people to be able to form any idea and check it.

**(iii) Method**

I will ask the subject for directions to a a location about 20-25 min from the locality they stay in. I would prefer to be in a vehicle just to not allow them to frame their mind before hand and record the actual first thoughts that come to their mind. Also, I’ll make them

aware of the fact that I am not very familiar of the locality so that they give explicit directions and the path is detailed enough. This is a little tricky part as I don't want them to see me as a complete stranger so that their markers become biassed to bigger and more concrete things. This could be tackled if I pretend to be of the city and do not question them on the markers they give me the first time. I don't think that making them write down the directions would be a completely bad idea but this in my opinion gives more time and leads to a decrease in the number of linguistic markers which is the basic thing I am focusing on. Though I will secretly collect data i.e. keeping the subject in the dark about my intentions to conduct a study, I am not sure if this would really create a difference and I can thus tell them about the study based on the number of subjects I find who are ready to take this as inputs to a study(because finding 100 people who know how to drive from a locality can not always be met).

**(iv) Material for data collection**

As briefly brought up in the previous bullet, I will verbally ask them for directions and I'll focus on the number and the type of the linguistic markers they use. I will also record the time the subjects are taking in giving the complete instruction. Let's talk about what I will be focussing on. The basic variables I'll be looking at are the number of steps the instructions are spanned into and the markers like concrete objects and landmarks(buildings, traffic signals, road signs etc.), left/right direction words, distance markers like kilometers etc., north-south direction words, set ways like roads, names of roads, streets etc. . These markers will be the fields and the number of time they are used per subject (divided by 60 for females and by 40 for males) will be the entries. The number of steps the data is given in separated using key words like, 'first', 'then', 'after this', '*pehle', 'uske baad', 'fer', 'ab'* etc. where the subject finishes one instruction and moves onto the next. Other than markers and steps I'll also count the total number of words and record the time taken to give data.

**(v) Method for recording/noting**

I will record the data using a tape recorder. Here, as I want instantness to be a feature while the subjects think about the input they want to give, writing down everything specified in the above bullet is not possible. I also feel that since I am not looking at any phonetic aspect, little disturbances while recording can be allowed and won't interfere much while finally plotting the data down. The method to calculate the number of steps has been mentioned in the previous bullet. Time can be recorded while taking the data but I'd prefer to calculate it while analysing the data so as to be able to stop the clock whenever the subject talks about something other than giving directions.

**c) Analysing the data**

For analysing the data I'll plot the markers and entries in a table, calculate the respective averages for men and women and compare the values. The markers will be the fields

and the number of time they are used per subject (divided by 60 for females and by 40 for males) will be the entries.

| | ***Males*** | ***Females*** |
|---|---|---|
| Words | | |
| Steps | | |
| Words/step | | |
| Left-right directions | | |
| Distance markers | | |
| North-south directions | | |
| Buildings and other concrete markers | | |
| Named roads and streets | | |
| Time | | |

The entries will be the weighted mean of the values from the data received.
While analysing I'll simply compare the two columns and look for differences in the final value that is obtained.
*(I expect to see a greater word/step ratio, time, words and steps in case of women following my hypothesis. I also expect distance markers, buildings, north-south directions to be more in case of men while left-right directions to be more in case of women.)*

Any conclusion will be formed only if there is a considerable difference between entries in the two columns which is difficult to set a bound on before actually seeing the range of actual data.