Lab 5: Diffusion Model and IAT

After copying and pasting the code into R, you will be working with two functions. One will simulate a single diffusion process, and the other will simulate a condition in an experiment (i.e., a group of trials with similar characteristics).

diffusion(a, z, drift)

a: separation between boundaries (try 1 as a the default value)
z: starting point (try .0.5 as the default value
drift: average direction of the process (try .2)

1. Use this function with the diffusion(1, .5, .2). Do it several times (about 100 times). Write a paragraph with your observations
2. Change each of the parameters by about 50% of their values and repeat (1) for each.
3. Find a way to make the program to fail. Explain what you did and why the program fails

The traditional way to analyze IAT has been to calculate the average response time for the two mixed blocks across all conditions, and then to find the difference. So, the IAT score is defined as mean RT(consistent) – RT (inconsistent)

Use the function dmsim to simulate the IAT

```
dmsim(aa,vv,ter)
     aa: separation between boundaries
     vv: drift rate
     ter: Time of encoding and response execution
```

The output will be a vector with 3 values: Proportion correct, mean RT for correct responses, and .1 quantile for correct responses. (we just assume that z=a/2)

4. What are the differences between the `diffusion` function and the `dmsim` function?

5. Simulate the IAT. Remember, there are 8 critical conditions: +/- words in matching block, +/- words in mismatching block, black/white in matching block, and black/white in mismatching blocks. Find five ways to obtain an IAT score between 80 and 160. What do these simulations mean in terms of cognitive processes (each of them has to mean something different)?

Begin with values aa=1 vv=.2 ter=500

6. Is there a way to distinguish between the three ways to obtain an IAT score? In other words, what should we be looking for in the data?

7. What are some of the limitations of using the diffusion model?