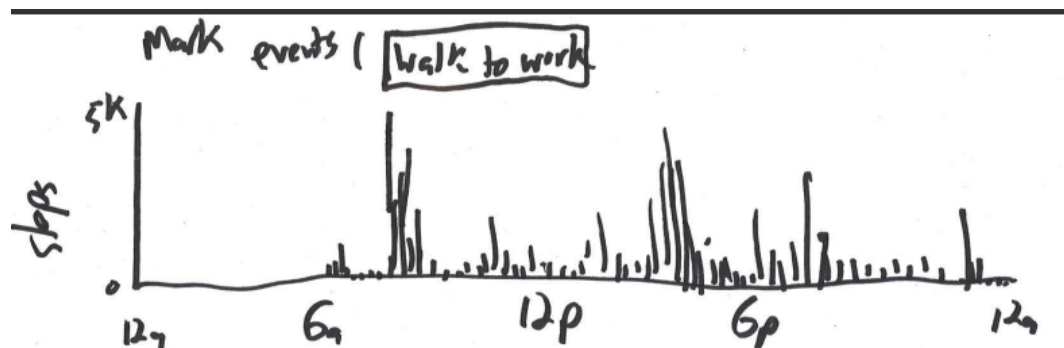


What uses might you have for a human behavior modeling and simulation toolkit?

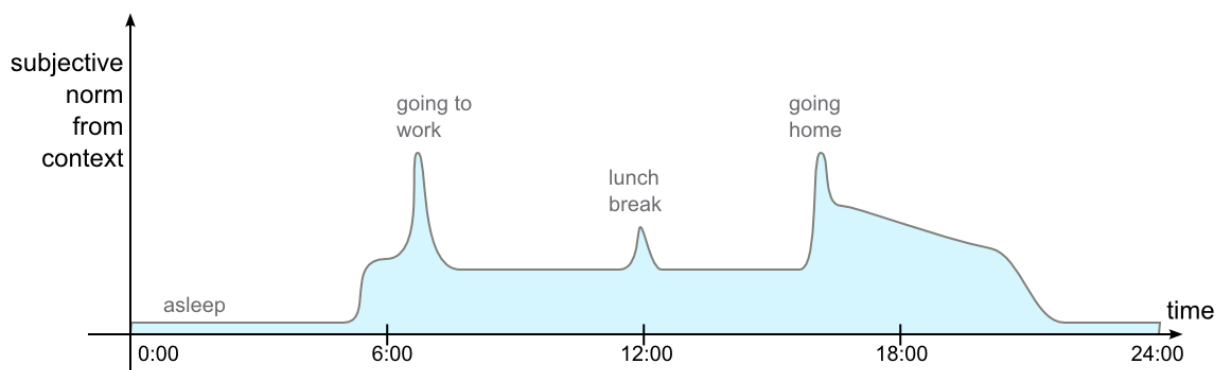
Imagine that Sally is 13 year old Hispanic girl who lives in the LA area with her mother only. Sally walks to school every day but that might be the most exercise she gets during the day. Several things contribute to her step count over the course of a day, such as:

- Resources (i.e. Sally likes to play basketball, but there are limited number of basketballs available at school – access for Sally is influenced by a number of variables, i.e. presence of boys who get there first, etc.),
- Time (sometimes she has more time for play, depending upon a number of variables, i.e. homework load, parental support, etc.),
- How Sally feels about her ability and desire to be active (i.e. self-efficacy, motivation, presence of other kids who either play with her or tease her, etc.)
- Other variables – improvisation is welcome

Imagine how Sally's day is going. We would like to graph Sally's step-count and factors which influence her step count. For example, imagine Dr. Hekler's hypothetical work day:



Events which influence step count have been marked on the time series. We can operationalize the events and imagine a mediating factor, which we think may be the subjective norm of the user context. A time series of this factor might look like:



This variable may explain the morning and afternoon bumps in step-count, but there are definitely additional variables at play.

Now draw a similar step-count graph for one of Sally's days, and label events which might influence her step-count.

Considering your events, pick any two variables you want which might explain features of Sally's step count. You might choose an opportunity, motivation, or ability based construct; but be as creative as you like. Graph your two variables below.

How might this process be improved or simplified?

Hypothetical Scenario "virtually real virtual humans"

Imagine that you have been granted access to a state-of-the-art super-computing grid and equipped with a program capable of simulating human behaviors.

The simulation outputs behaviors such as: daily levels of physical activity, eating behavior, and stress levels. The simulation also gives you access to all imaginable data surrounding the virtual human(s) such as their location, body temperature, social interactions, demographic data, past behaviors, and personality traits. The inner workings of the simulation model are hidden from you at this time.

How might you validate or test the simulation?

How could you use this hypothetical simulation?

What kind of charts or graphs would you find most useful for exploring virtual human behavior?

Hypothetical Scenario "you have been promoted"

Because of your excellent work on the last section, you have been granted access to the inner workings of the simulation. It is a large and complex hierarchy of source files. The programming language is well documented and you could learn it, but right now it looks like gibberish to you.

The documentation explains how functions programmed into the software are based on mathematical descriptions of existing psychological theories. This means that by manipulating the source files, you can adjust the 'theory' behind the simulation - or so it says...

What kind of visualizations would you need to explore the inner workings of the virtual human?

What things could you do with this additional knowledge and capability?

More questions:

What are some research questions which simulation models may be able to help solve?

What do you think is the biggest hurdle for simulation and modeling in behavioral science?