**Proposed Model 1: Individual loss of significance**

Agent variables

1. Agent’s quest for significance
   1. This is a number that ranges from 0-1
   2. People start with some baseline level of this (see environment variables below). Once it passes a threshold, it activates the quest for significance, and changes how agents are influenced by other agents.
2. Agent’s ideology
   1. A continuous variable ranging from 0 to 1
   2. 0 = nonviolent; 1 = violent
   3. Any value below .5 represents a nonviolent ideology, with values closer to 0 representing stronger acceptance of/belief in nonviolence
   4. Any value above .5 represents a violent ideology, with values closer to 1 representing stronger acceptance of/belief in violence

Environment

1. Distribution of quest for significance
   1. Should be normally distributed.
2. Distribution of ideology
   1. Our theory defines moderate and extreme as statistical deviations from the norm, so we vary the distribution of the ideology accordingly.
   2. Ideology should be skewed to the right. The ideologies endorsed by the fewest agents would be strong beliefs in violence (like a .9 or 1) and nonviolence (like a 0 or .1), but there should have more agents who somewhat endorse nonviolence (like a .4) than who endorse violence (like a .6).
   3. We would like to start the model so that there are some people who endorse extreme views and are connected to others who do so also (like a cluster). But, we can also make sure some are unconnected to other extreme agents. This accounts for the notion that some people may have encountered violent ideologies online and not from within their network.
3. When the simulation begins, there should be a positive correlation between quest for significance and endorsement of extreme ideology.

Running the model

1. We start the model using the parameters above.
2. We use rules to guide the nature of interactions between agents.
   1. Agents LOW on quest for significance are assumed to follow normal social influence dynamics = similarity and proximity. Because we have distributed violent/extreme ideologies as the minority, this means that agents should be less influenced by them.
   2. Agents HIGH on quest for significance follow a different dynamic
      1. Once a quest is activated, people are more influenced by agents who are extreme (whether violent or nonviolent) or violent (whether moderate or extreme). This would flip what we would assume are normal social influence dynamics.
      2. Once a quest is activated, people are more influenced by the dominant ideology in their environment—i.e., more influenced by whatever ideology is most commonly held by other agents to which that individual is connected
3. At each stage of the model, agents interact with each other, and after that interaction, they update themselves
   1. Update their ideology
   2. Update their quest for significance. The quest for significance, once activated, should gradually decrease with time. Other needs gain importance over time, reducing the motivational imbalance, and therefore decreasing the relative preference for the significance need.
4. We repeat this process, and continue to model interactions between agents. This tells us how varying significance quest levels in a population increase/decrease the endorsement of extreme/violent ideologies

**Proposed Model 2 – Collective loss of significance**

Agent variables

1. Agent’s quest for significance
   1. This is a number that ranges from 0-1
   2. People start with some baseline level of this (see environment variables below).
   3. This also (partially) determines an agent’s response to a collective loss of significance event. Agents close to the quest threshold and people low on quest will be more responsive to the collective event than will people in the middle
2. Agent’s ideology
   1. A continuous variable ranging from 0 to 1
   2. 0 = nonviolent; 1 = violent
   3. Any value below .5 represents a nonviolent ideology, with values closer to 0 representing stronger acceptance of/belief in nonviolence
   4. Any value above .5 represents a violent ideology, with values closer to 1 representing stronger acceptance of/belief in violence
3. Agent’s threat susceptibility
   1. A continuous variable that ranges from 0-1
   2. As values increase, an agent is more responsive to the collective loss of significance event

Environment

1. Distribution of quest for significance
   1. Same as Model 1. Normal distribution.
2. Distribution of ideology
   1. Same as Model 1. Skewed right.
3. Distribution of threat susceptibility
   1. Should be normally distributed
4. When the simulation begins, there should be a positive correlation between quest for significance and endorsement of violence. Same as in Model 1.

Running the model

* + - 1. We start the model using the parameters above.

1. We use rules to guide the nature of interactions between agents
   1. Agents LOW on quest for significance are assumed to follow normal social influence dynamics = similarity and proximity. Because we have distributed violent/extreme ideologies as the minority, this means that agents should be less influenced by them.
   2. Agents HIGH on quest for significance follow a different dynamic
      1. Once a quest is activated, people are more influenced by agents who are extreme (whether violent or nonviolent) or violent (whether moderate or extreme). This would flip what we would assume are normal social influence dynamics.
      2. Once a quest is activated, people are more influenced by the dominant ideology in their environment—i.e., more influenced by whatever ideology is most commonly held by other agents to which that individual is connected
2. At each stage of the model, agents interact with each other, and after that interaction, they update themselves
   1. Update their ideology
   2. Update their quest for significance. The quest for significance, once activated, should gradually decrease with time. Other needs gain importance over time, reducing the motivational imbalance, and therefore decreasing the relative preference for the significance need.
3. At some point, we inject large scale, collective loss of significance events that effect the entire population
   1. Agents’ responsiveness to this events is determined by…
      1. Current level of significance quest
      2. Current level of threat susceptibility
   2. The effect of this event is that it increases agents’ quest for significance. This means that the event should increase the percentage of agents in the population that are high on quest—i.e. agents who were low, become high as a result of the collective threat (of course, depending on their responsiveness).
4. After the collective event, we continue to model interactions between agents, and agents continue to update themselves based on these interactions
5. We can run different versions of this model where we model single vs. multiple collective events, and vary how these multiple threats occur (random vs. predetermined)

**Proposed Model 3:**

* + - 1. Begin with Model 2 above
      2. Model the influence of the collective event as time-limited. The effect that the event has on an agent’s significance quest should have a finite duration, and after time has passed, the influence of that event should have less impact on behavior.
      3. We set up the model, so that after every interaction stage, the increase in quest that was experienced after the threat starts to recede to baseline levels.
      4. Run the model, and see how this changes the outcome.

**Models in the future**

* We start here and refine what we have/validate the models with data from the field or from experiments. Eventually, we can model large scale events that might have the opposite effect of reducing radicalization within a population.