Figure 1: A directed acyclic graph (DAG) of the model. The shaded ovals symbolize observed nodes, i.e. data, and unshaded ovals symbolize unobserved nodes, i.e. unknown parameters or groups of parameters. The two rectangles drawn around groups of nodes at the top of the DAG are “plates,” and signify repetition of the enclosed nodes. In the case of the top-most plate, which is labeled “3” in its top-left corner, the DAG consists of a total of three repetitions of this group of nodes: (1) the pictured nodes, and (2) equivalent nodes where “age” replaces “degree,” and (3) equivalent nodes where “age” replaces “degree” and \( \delta \) and \( \tau \) replace \( \alpha \) and \( \sigma \), respectively. The other plate, labeled “6,” indicates six total repetitions of this set of nodes, where 2 of the additional repetitions consist of replacing “black” with “female” and “black-female,” respectively, and the other three additional repetitions correspond to the model for the slopes, \( \delta \), rather than the intercepts \( \beta \) (where the 3 types of slopes are “black,” “female,” and “black-female” slopes). Finally, many of the nodes themselves represent large groups of parameters, such as the node for \( \alpha_{st}^{state-year} \), which is a set of \( 51 \times 54 = 2754 \) state-year interaction parameters. In this case, the DAG does not contain a plate to symbolize the repetition of parameters, but uses subscripts in the node label instead.