$Number\ of\ simulated\ stimuli\ -\ N = \{40\}$

$Trial\ indices\ -\ m = 1, \ldots, (N-1)\ and\ n = 2, \ldots, N$

$Hidden\ states\ -\ Q = \{q_i\},\ i = 1, \ldots, 4\ :$

$\qquad q_i \in \{\text{I}(+,+),\text{II}(-,+),\text{III}(-,-),\text{IV}(+,-)\}\ of\ V(x,y)_{\langle \varepsilon, n_c, \gamma_{CS} \rangle}$

$Transition\ probabilities\ -\ \Phi = \left\{ \phi_{i \to j} = P(q_j^{(n)} | q_i^{(m)}) \right\}$

$$\Phi_{q_i} \underrightarrow{(m,n)}_{q_j} = \begin{bmatrix} P_{q_1,q_1}^{(m,n)} & \cdots & P_{q_1,q_j}^{(m,n)} \\ \vdots & \ddots & \vdots \\ P_{q_i,q_1}^{(m,n)} & \cdots & P_{q_i,q_j}^{(m,n)} \end{bmatrix} : \sum_{q_j=1}^{|Q|} P_{q_i,q_j}^{(m,n)} = 1$$

$Observable\ emissions\ -\ O = \{o_k\},\ k = 1, \ldots, 2\ :\ o_k \in \{/bAk/, /dAk/\}$

$Emission\ probabilities\ -\ \Theta = \left\{ \theta_{jk} = \theta_j(o_k) = P(o_k^{(n)} | q_j^{(n)}) \right\}$

$$\Theta_{o_k,q_j}^{(n)} = \begin{bmatrix} P_{o_1,q_1}^{(n)} & \cdots & P_{o_k,q_1}^{(n)} \\ \vdots & \ddots & \vdots \\ P_{o_1,q_j}^{(n)} & \cdots & P_{o_k,q_j}^{(n)} \end{bmatrix} : \sum_{o_k=1}^{|O|} P_{o_k,q_j}^{(n)} = 1$$

$Initial\ state\ probabilities\ -\ \Pi = \{\pi_i = P(q_i^{(m=1)})\}$

$Time-dependent\ HMM\ -\ \Lambda = \{\Phi, \Theta, \Pi\}$

Box 5.1.Definition of the Hidden Markov Model with time-dependent transition and emission probabilities used to simulate the experiments. See text for details.