Pearce-Hall model equations:

$$V_{i,j}^{n+1} = V_{i,j}^{n} + \Delta V_{i,j}^{n} \quad \text{(excitatory)} \tag{1}$$

$$\overline{V_{i,j}^{n+1}} = \overline{V_{i,j}^{n}} + \overline{\Delta V_{i,j}^{n}} \quad \text{(inhibitory)} \tag{2}$$

$$\Delta V_{i,j}^{n+1} = \beta_j^{+} \cdot \alpha_i^{n} \cdot \lambda_j^{n+1} \quad \text{(excitatory)} \tag{3}$$

$$\overline{\Delta V_{i,j}^{n+1}} = \beta_j^{-} \cdot \alpha_i^{n} \cdot \left|\overline{\lambda_j^{n+1}}\right| \quad \text{(inhibitory)} \tag{4}$$

$$\overline{\lambda_j^{n+1}} = \lambda_j^{n+1} - \left(\sum_i V_{i,j}^{n} - \sum_i \overline{V_{i,j}^{n}}\right) \tag{5}$$

$$\alpha_i^{n+1} = \gamma \cdot |\overline{\lambda_j^{n+1}}| + (1-\gamma) \cdot \alpha_i^{n} \tag{6}$$

$$V_{net_{i,j}}^{n+1} = V_{i,j}^{n+1} - \overline{V_{i,j}^{n+1}} \tag{7}$$

α_i^n = associability of the CS i on trial n.

β = Learning rate (excitory or inhibitory) parameter for the US.

λ_i^n = asymptote of learning for stimuli i at trial n.

$V_{i,j}^{n+1}$ = associative strength of the CS i on trial $n+1$.

$\overline{V_{i,j}^{n+1}}$ = inhibitory associative strength of the CS i on trial $n+1$.

γ = Parameter used for modelling importance on past or present associations.