

# Changes to the Rescorla-Warner Modified Model

## 1 Updating $\alpha$

### 1.1 Alternative: Double $\alpha$

$$\begin{aligned}\alpha^{n+1} &= \alpha^n + \Delta\alpha^n \\ &= \alpha^n + [\lambda\alpha_{\text{Mack}}^n + (1 - \lambda)\alpha_{\text{Hall}}^n]\end{aligned}$$

$$\begin{aligned}\alpha_{\text{Mack}}^n &= f(\lambda - V) \\ \alpha_{\text{Hall}}^n &= -\alpha^n \cdot \delta \cdot e^{-\frac{1}{2}} \cdot (\nabla_1[f](n))^2 \\ &= -\alpha^n \cdot \delta e^{-\frac{1}{2}} \cdot (V_{\text{MA}}^n - V_{\text{MA}}^{n-1})^2\end{aligned}$$

$$\delta \in (0, 1)$$

$$V_{\text{MA}}^n(k) = \frac{1}{k} \sum_{i=n-k+1}^n V^i$$

$\alpha_{\text{Hall}}$  should reflect the Hall and Pearce phenomenon