$$V_0(a=1) = p_1(r_1 + \gamma V_1) + p_2(r_2 + \gamma V_2) + p_3(r_3 + \gamma V_3)$$

or more formally,

$$V_0(a) = \mathbb{E}_{s \sim S}[r_{s,a} + \gamma V_s] = \sum_{s \in S} p_{a,0 \to s}(r_{s,a} + \gamma V_s)$$

By combining the Bellman equation, for a deterministic case, with a value for stochastic actions, we get the Bellman optimality equation for a general case:

$$V_0 = \max_{a \in A} \mathbb{E}_{s \sim S}[r_{s,a} + \gamma V_s] = \max_{a \in A} \sum_{s \in S} p_{a,0 \to s}(r_{s,a} + \gamma V_s)$$

(Note that $p_{a,i \to j}$ means the probability of action *a*, issued in state *i*, to end up in state *j*.)