

**Joint effect
of G and E**

**Independent effect
of G (among e)**

**Independent effect
of E (among g)**

2a.

	D+	D-	
GE	a ₁	b ₁	N ₁₁
ge	c ₂	d ₂	N ₀₀

	D+	D-	
Ge	c ₁	d ₁	N ₁₀
ge	c ₂	d ₂	N ₀₀

	D+	D-	
gE	a ₂	b ₂	N ₀₁
ge	c ₂	d ₂	N ₀₀

$$RR_{GE} = \frac{a_1 / N_{11}}{c_2 / N_{00}}$$

$$RR_{Ge} = \frac{c_1 / N_{10}}{c_2 / N_{00}}$$

$$RR_{gE} = \frac{a_2 / N_{01}}{c_2 / N_{00}}$$

2b.

$$GxE_{RR} = \frac{RR_{GE}}{RR_{Ge} * RR_{gE}} = \frac{\frac{a_1 / N_{11}}{c_2 / N_{00}}}{\frac{c_1 / N_{10}}{c_2 / N_{00}} * \frac{a_2 / N_{01}}{c_2 / N_{00}}}$$

$$OR_{GE} = \frac{a_1 * d_2}{b_1 * c_2}$$

$$OR_{Ge} = \frac{c_1 * d_2}{d_1 * c_2}$$

$$OR_{gE} = \frac{a_2 * d_2}{b_2 * c_2}$$

2c.

$$GxE_{OR} = \frac{OR_{GE}}{OR_{Ge} * OR_{gE}} = \frac{\frac{a_1 * d_2}{b_1 * c_2}}{\frac{c_1 * d_2}{d_1 * c_2} * \frac{a_2 * d_2}{b_2 * c_2}}$$