BV_m for mother G_1G_1: → deviation (Abweichung)

$$BV_m = 2 \cdot (\mu_m - \mu)$$

μ_m is the mean genotypic value of all offspring of mother G_1G_1:

$$\mu_m = p \cdot a + q \cdot d + 0 \cdot (-a)$$

$$\rightarrow BV_m = 2\left[(p \cdot a + q \cdot d) - [(p-q)a + 2pqd]\right]$$

$$= 2[pa + qd - pa + qa - 2pqd]$$

$$= 2[qd + qa - 2pqd]$$

$$= 2[qa + qd(1-2p)]$$

$p+q-2p = q-p$

$$= 2q[a + (q-p)d]$$