Commentary

The Pitfalls of Heterosis Coefficients: Supplementary Materials

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Table S1

Heterosis coefficients expressed as functions of genetic effects. Subscripts: same as in Table 1. μ, mean of the multilocus homozygous genotypes; $\sum a$, sum of the additive effects; $\sum d$, sum of the dominance effects; $\sum e_{\mathrm{dom}}$, sum of the dominance-by-dominance epistatic effects; $\sum e_{\mathrm{add}}$, sum of the additive-by-additive epistatic effects; $\sum e_{\mathrm{add\ even}}$, sum of the additive-by-additive epistatic effects involving an even number of genes; $\sum e_{\mathrm{add\ odd}}$, sum of the additive-by-additive epistatic effects involving an odd number of genes (from [13]).

Reference	Coefficient	Coefficient as function of genetic effects
Mid-parent	$H_{\mathrm{mp}} = z_{12} - \overline{z}$	$\sum d + \sum e_{\mathrm{dom}} - \sum e_{\mathrm{add\ even}}$
	$H_{\mathrm{MP}} = \dfrac{z_{12} - \overline{z}}{\overline{z}}$	$\dfrac{\sum d + \sum e_{\mathrm{dom}} - \sum e_{\mathrm{add\ even}}}{\mu + \sum e_{\mathrm{add\ even}}}$
	$H_{\mathrm{PR}} = \dfrac{z_{12} - \overline{z}}{(z_2 - z_1)/2}$	$\dfrac{\sum d + \sum e_{\mathrm{dom}} - \sum e_{\mathrm{add\ even}}}{\sum a + \sum e_{\mathrm{add\ odd}}}$
Best-parent	$H_{\mathrm{bp}} = z_{12} - z_2$	$\sum d + \sum e_{\mathrm{dom}} - \sum a - \sum e_{\mathrm{add}}$
	$H_{\mathrm{BP}} = \dfrac{z_{12} - z_2}{z_2}$	$\dfrac{\sum d + \sum e_{\mathrm{dom}} - \sum a - \sum e_{\mathrm{add}}}{\mu + \sum a + \sum e_{\mathrm{add}}}$

Figure S1
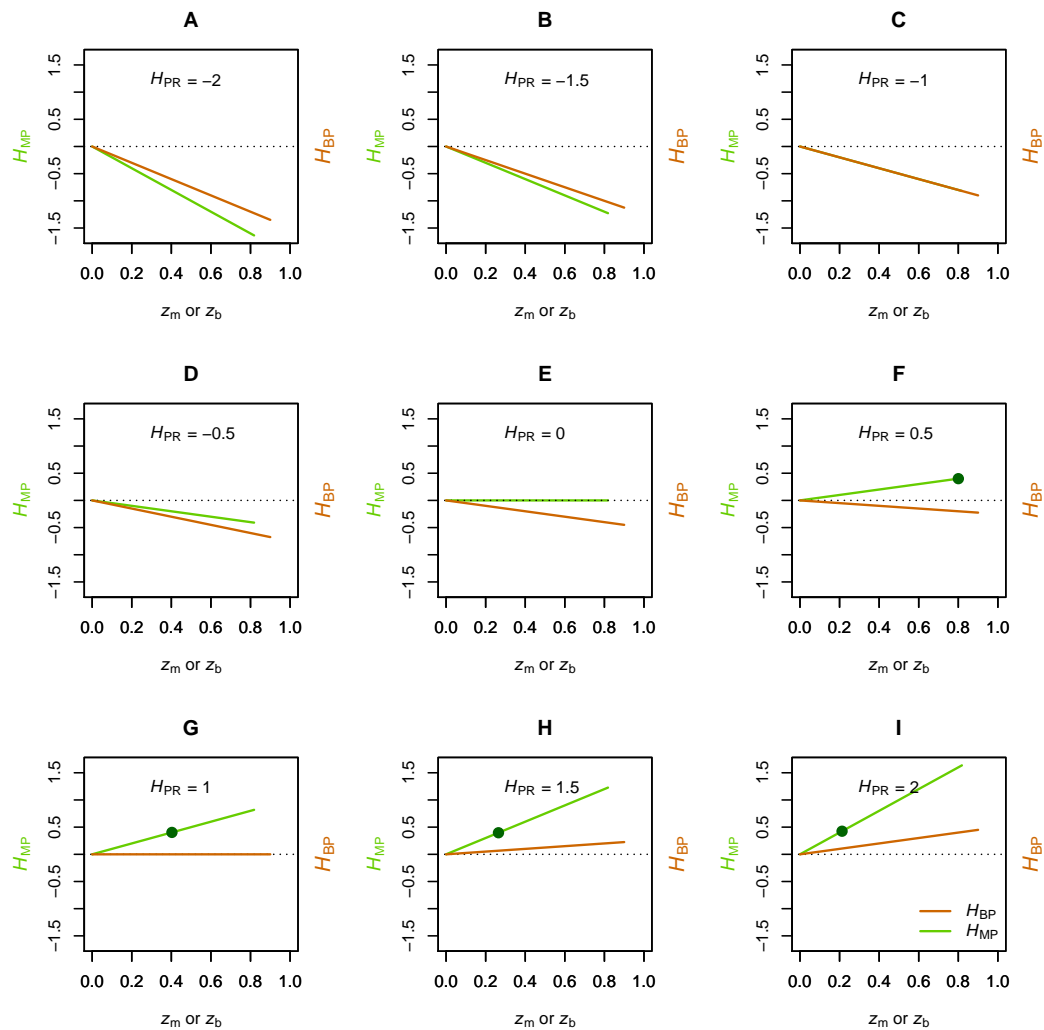
Influence of the scale of the parental values on H_{MP} and H_{BP} for different values of the potence ratio H_{PR}. (A) to (I) H_{PR} values from -2 to 2. $z_m = \frac{z_2 - z_1}{z_1 + z_2}$ and $z_b = \frac{z_2 - x_1}{z_2}$, with $z_1 = 1$ and z_2 varying from 1 to 10 (see Equations (1) and (2) in the text). Green line: relationship between z_m and H_{MP}. Orange line: relationship between z_b and H_{BP}. Dotted line: H_{MP} or $H_{BP} = 0$. The dark green points show that a given H_{MP} value (≈ 0.4) can be observed for very different H_{PR} values, and the same is true for H_{BP}.

Figure S2
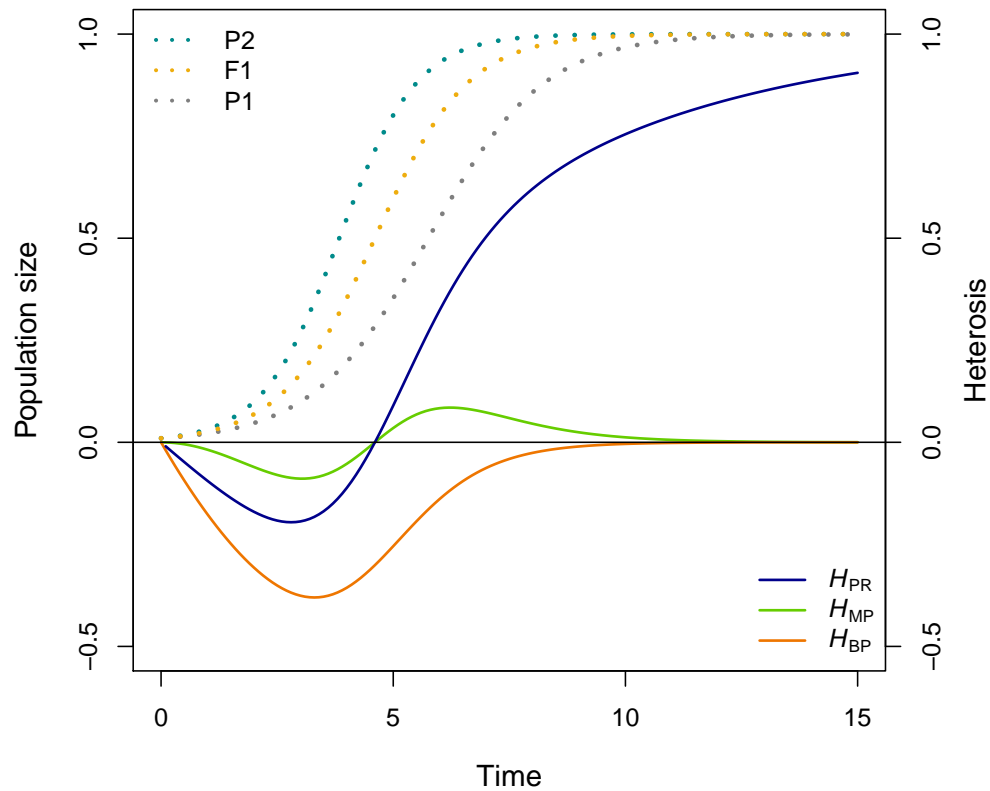
Heterosis for population size (simulations). Population sizes (dotted curves) follow over time a logistic function with $K = 1$ and $a = 100$ (see text). Parents P1 and P2 and hybrid F1 have respectively growth rates $r = 0.8$, $r = 1.2$ and $r = 1$ (i.e., this parameter is considered to be additive). Solid curves: profiles of heterosis coefficients (right scale).