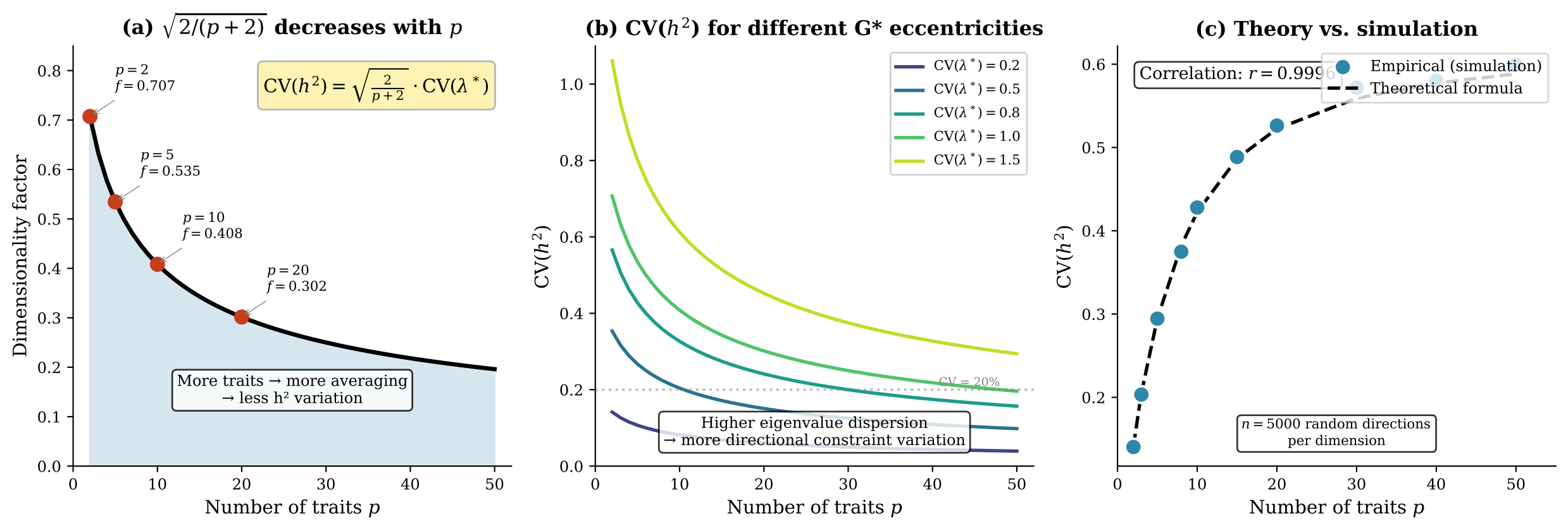
(a) $\sqrt{2/(p+2)}$ decreases with p
$\mathrm{CV}(h^2) = \sqrt{\frac{2}{p+2}} \cdot \mathrm{CV}(\lambda^*)$
$p = 2$
$f = 0.707$
$p = 5$
$f = 0.535$
$p = 10$
$f = 0.408$
$p = 20$
$f = 0.302$
More traits → more averaging
→ less h² variation
Dimensionality factor
Number of traits p
(b) CV(h^2) for different G* eccentricities
$\mathrm{CV}(\lambda^*) = 0.2$
$\mathrm{CV}(\lambda^*) = 0.5$
$\mathrm{CV}(\lambda^*) = 0.8$
$\mathrm{CV}(\lambda^*) = 1.0$
$\mathrm{CV}(\lambda^*) = 1.5$
CV = 20%
Higher eigenvalue dispersion
→ more directional constraint variation
CV(h^2)
Number of traits p
(c) Theory vs. simulation
Correlation: $r = 0.9996$
Empirical (simulation)
Theoretical formula
$n = 5000$ random directions
per dimension
CV(h^2)
Number of traits p