

McNemar–Bowker Test

Verified R analysis transcript

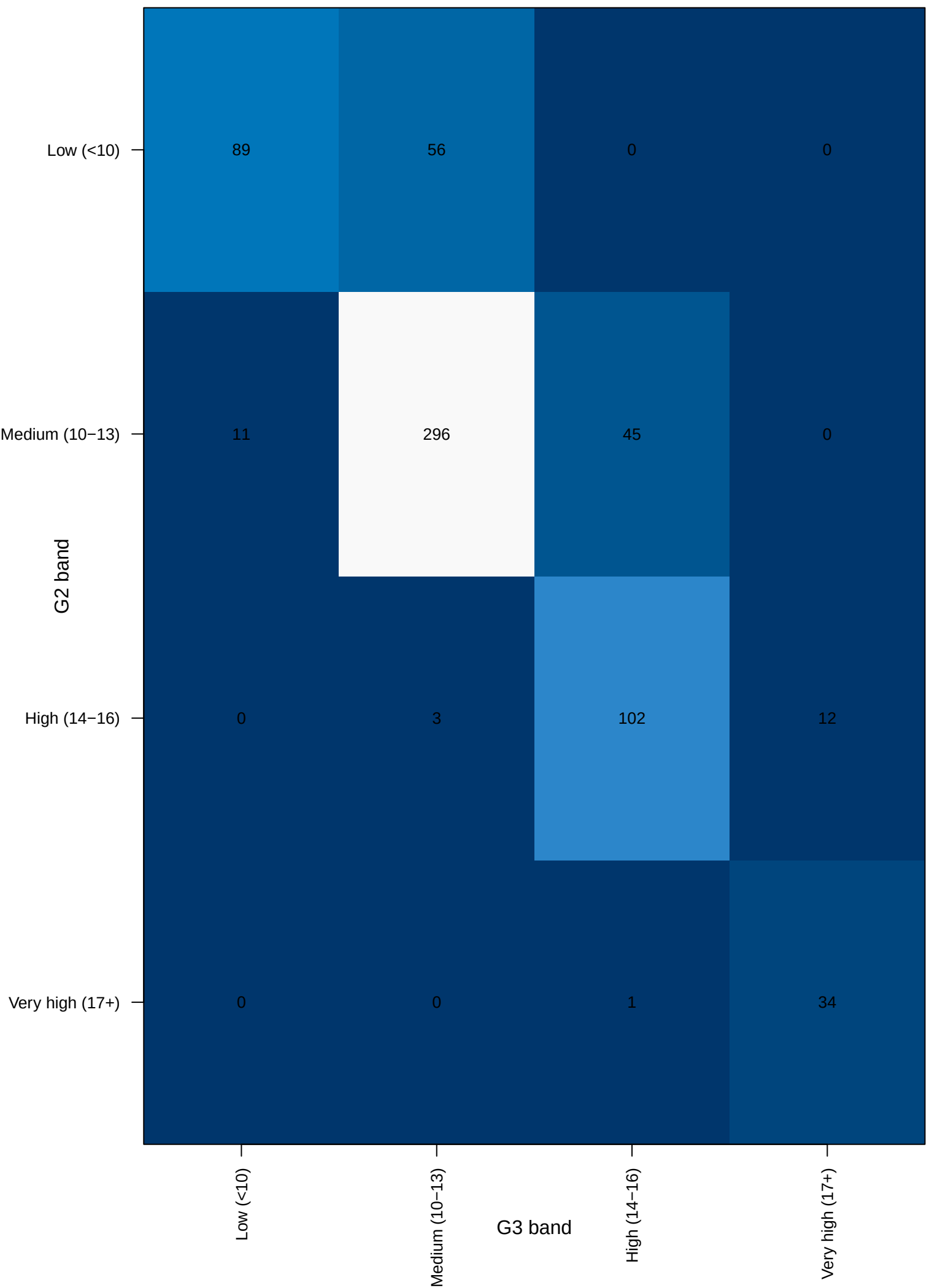
McNemar–Bowker tests paired marginal symmetry across four G2 and G3 grade bands.

Every off–diagonal category pair contributes $(n_{ij} - n_{ji})^2 / (n_{ij} + n_{ji})$; diagonal cells do not enter the statistic.

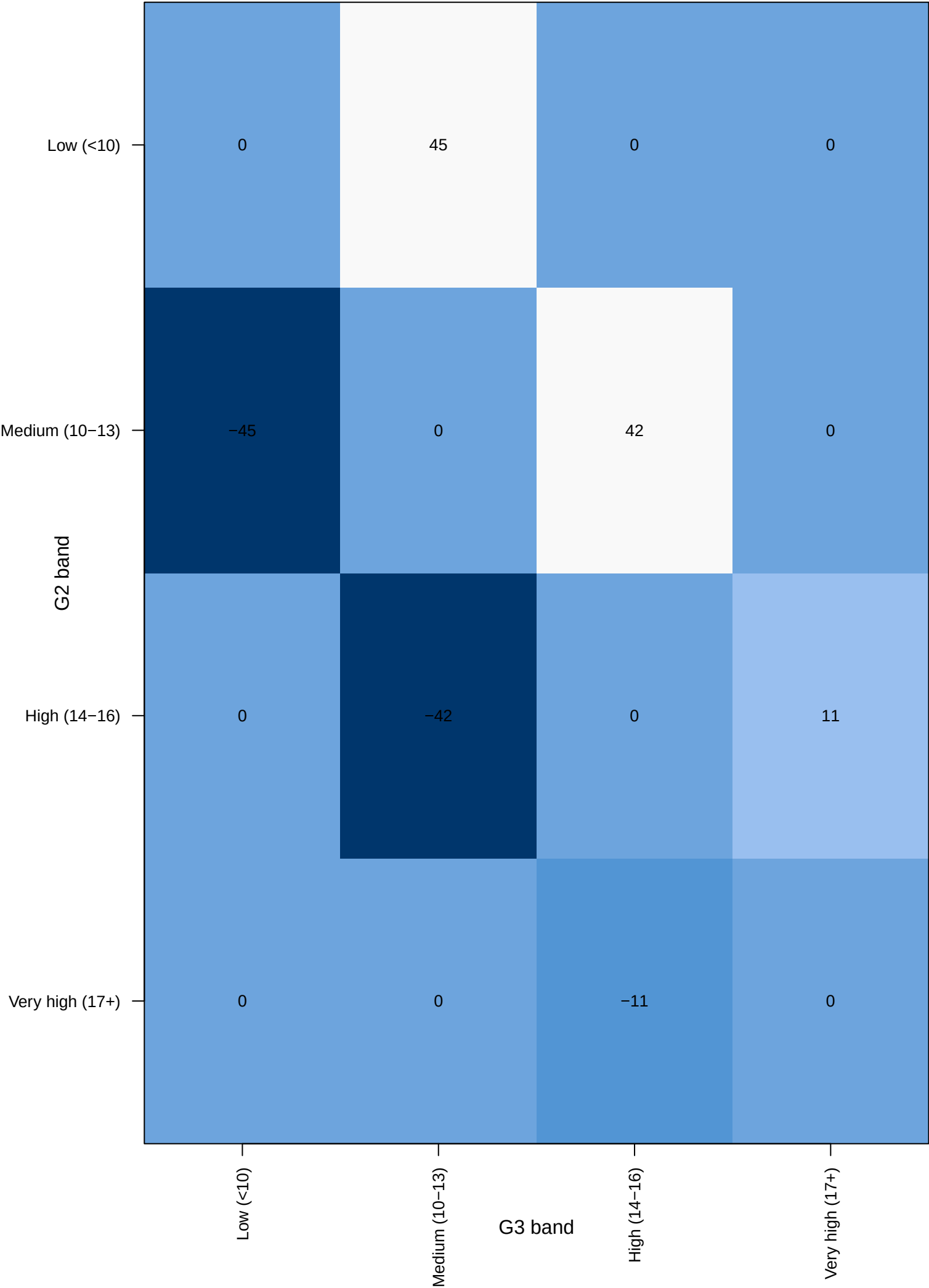
Bowker X–squared = 76.2815729, df = 3, p = 1.924873308e–16; paired students = 649.

This transcript uses G2 versus G3, distinct from the completed G1–versus–G3 Bowker reference.

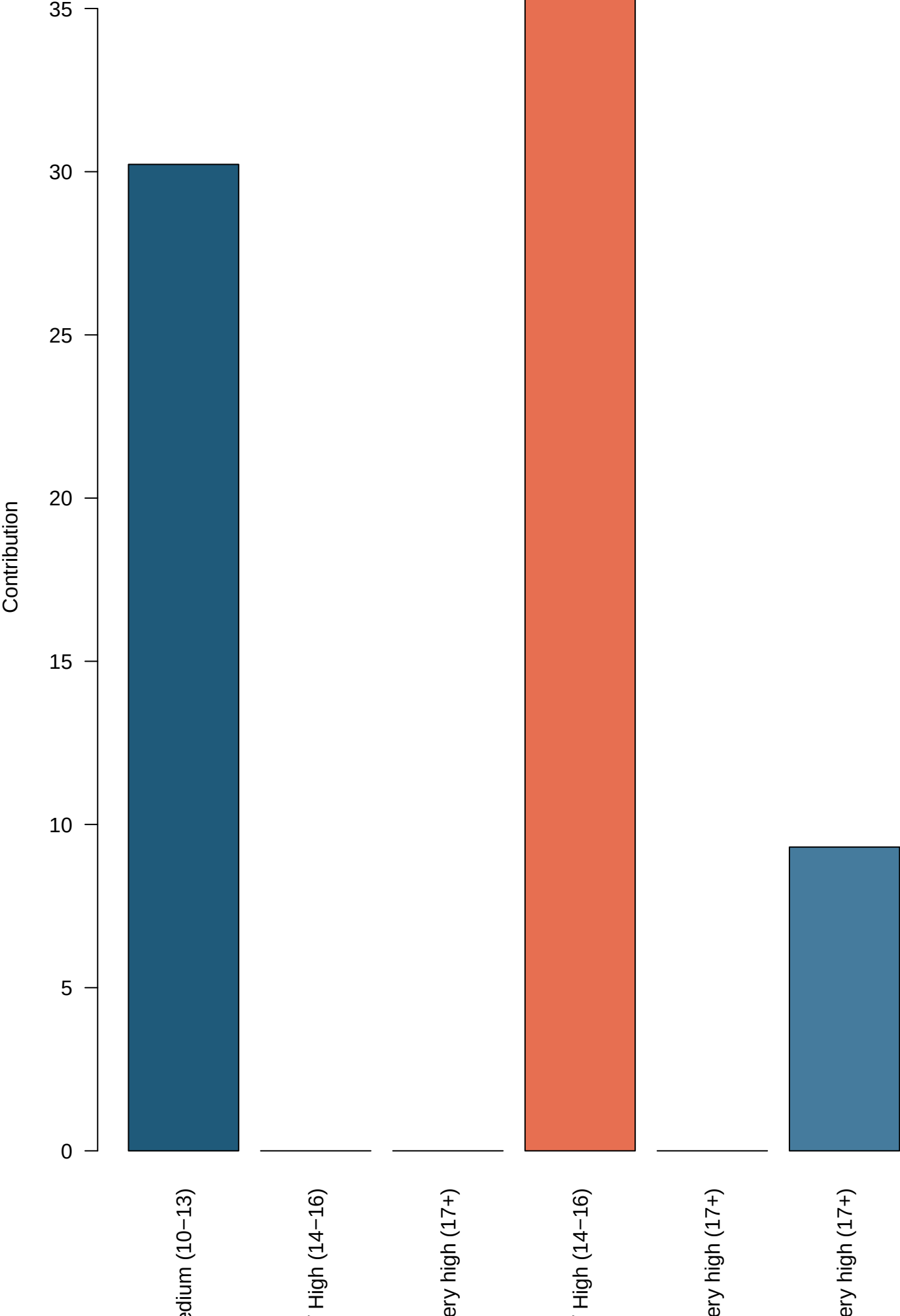
G2-to-G3 grade-band transitions



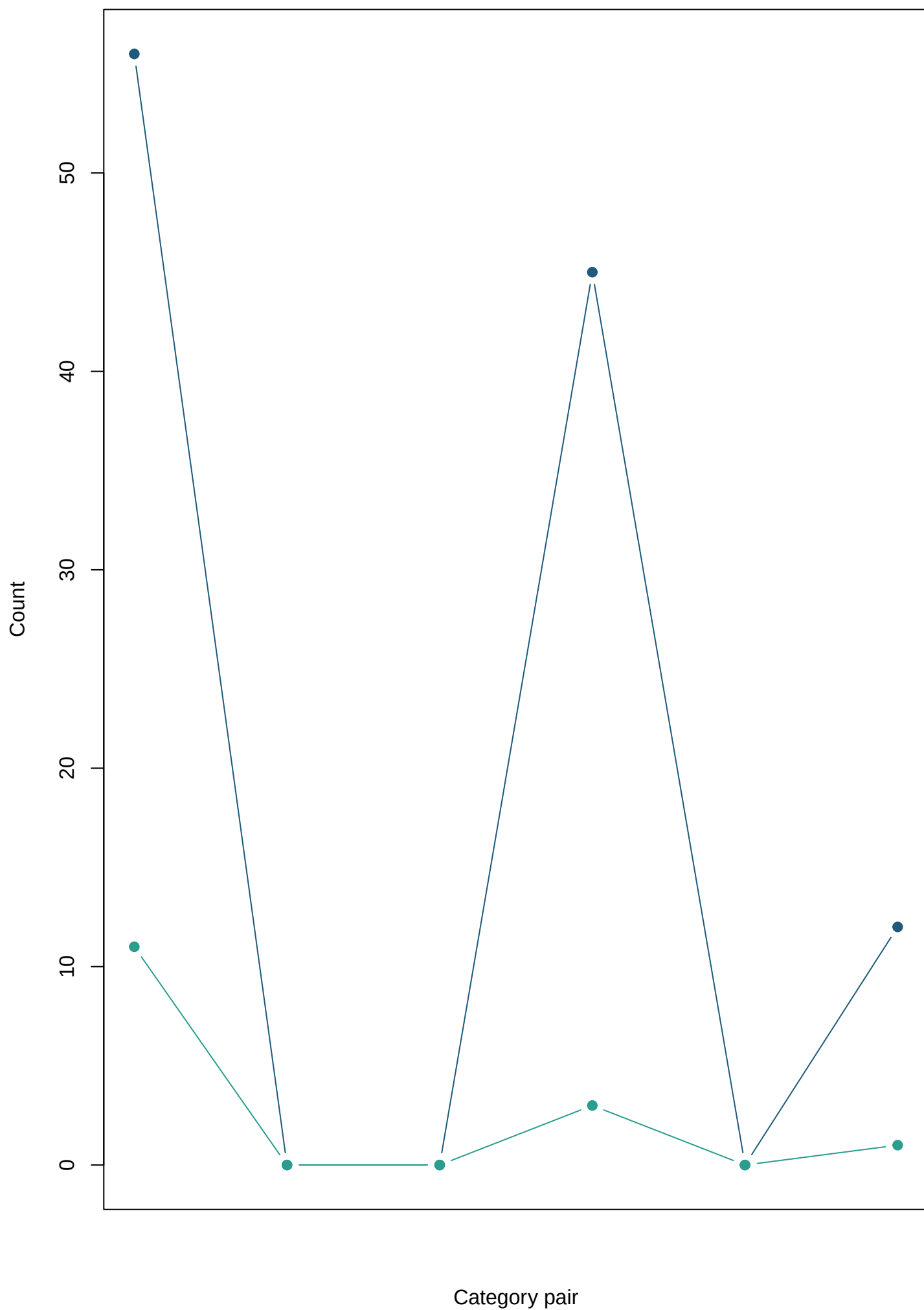
Directional transition asymmetry



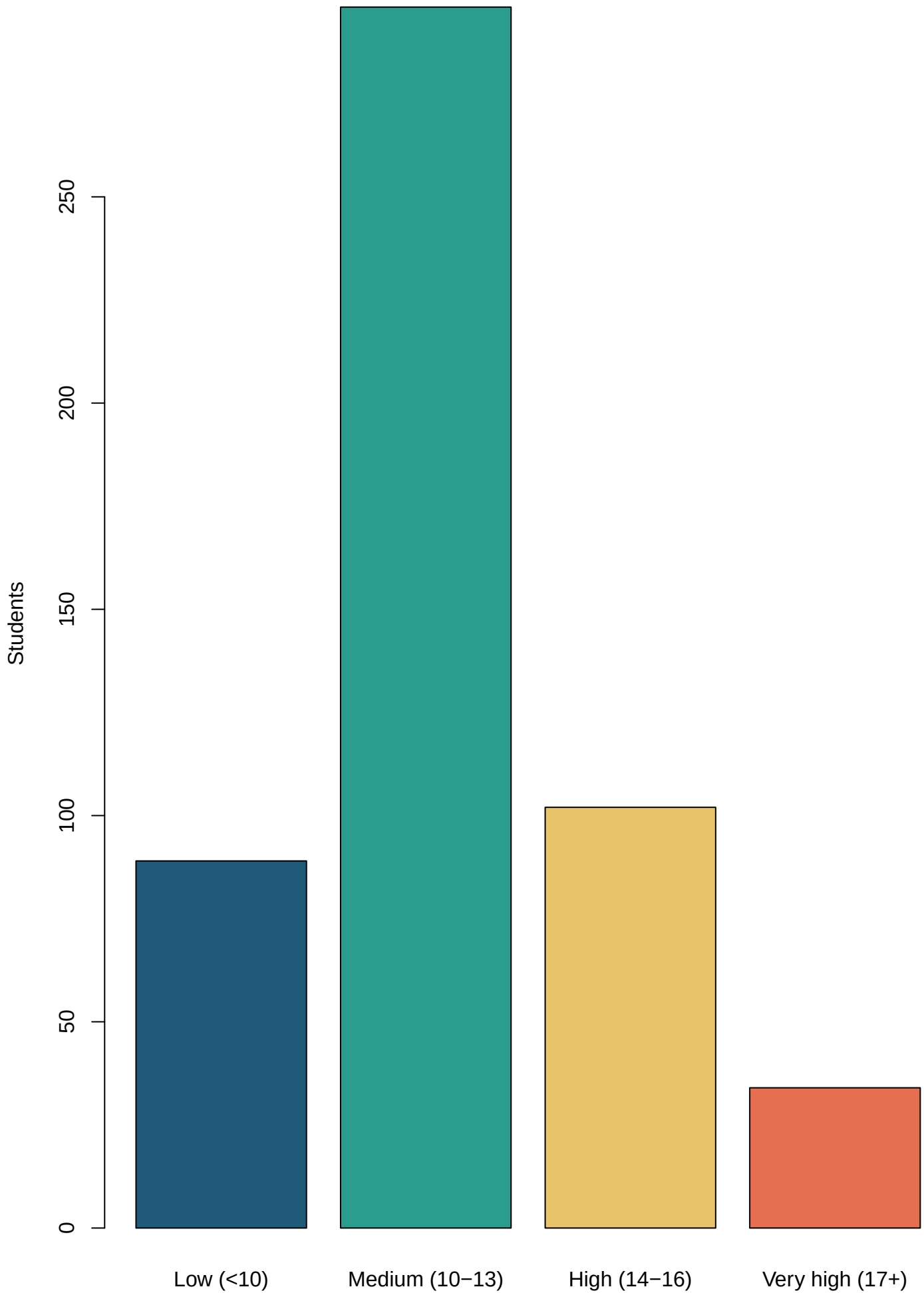
Bowker pair contributions



Opposing off-diagonal transitions



Unchanged grade-band counts



McNemar–Bowker Test key results

