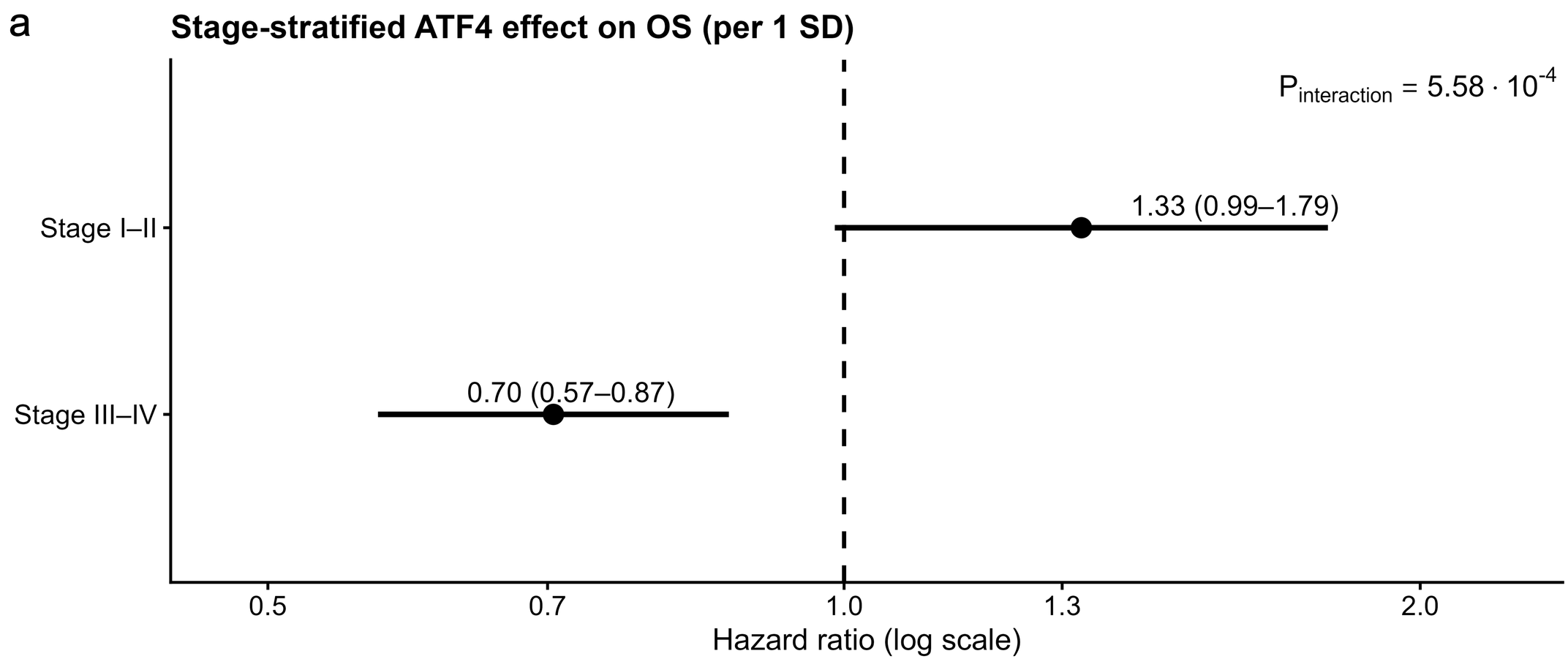
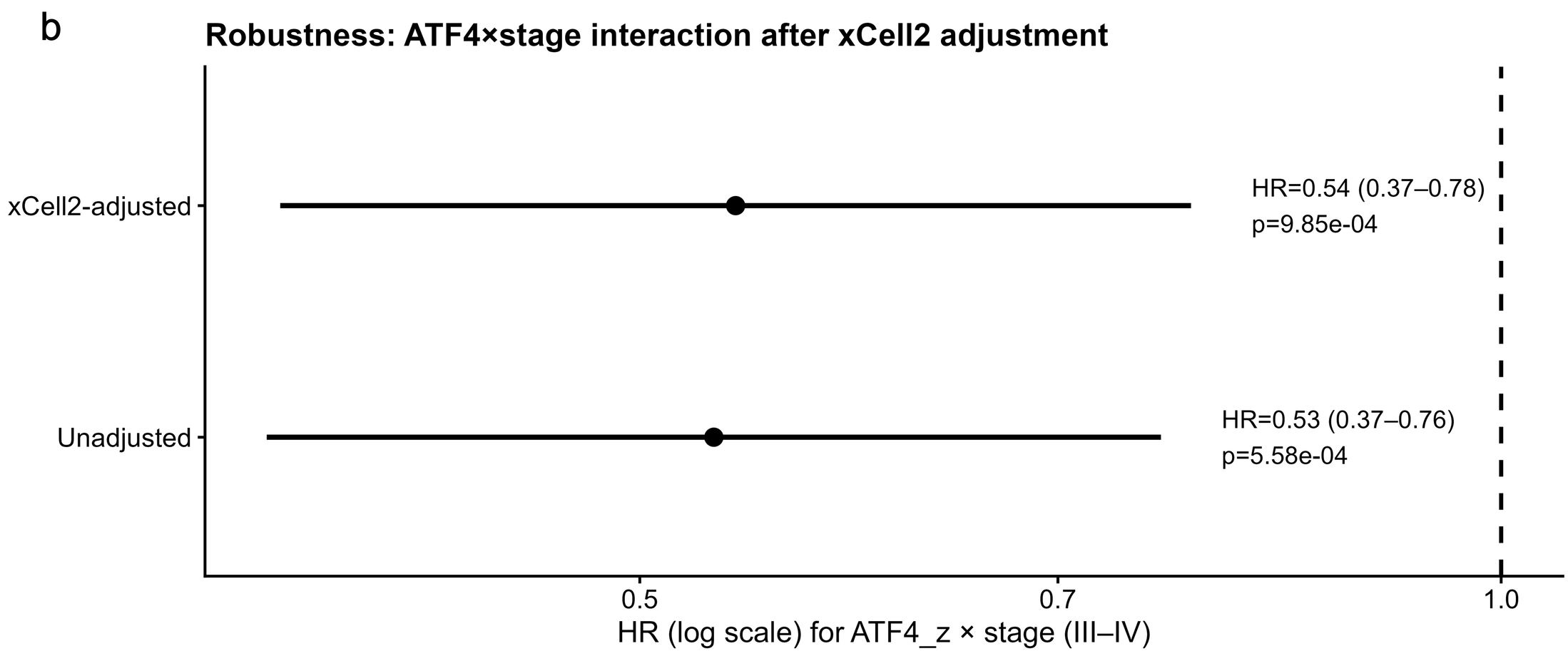

a
Stage-stratified ATF4 effect on OS (per 1 SD)
$P_{interaction} = 5.58 \cdot 10^{-4}$
Stage I–II
1.33 (0.99–1.79)
Stage III–IV
0.70 (0.57–0.87)
0.5
0.7
1.0
1.3
2.0
Hazard ratio (log scale)


b
Robustness: ATF4×stage interaction after xCell2 adjustment
xCell2-adjusted
HR=0.54 (0.37–0.78)
p=9.85e-04
Unadjusted
HR=0.53 (0.37–0.76)
p=5.58e-04
0.5
0.7
1.0
HR (log scale) for ATF4_z × stage (III–IV)