We present a detailed analysis of the “second-parameter pair” of globular clusters M3 (NGC 5272) and Palomar 3. Our main results can be summarized as follows: i) The horizontal-branch (HB) morphology of M3 is significantly bluer in its inner regions (observed with the Hubble Space Telescope) than in the cluster outskirts (observed from the ground), i.e., M3 has an internal second parameter. Most plausibly the mass loss on the red giant branch (RGB) has been more efficient in the inner than in the outer regions of the cluster. ii) The dispersion in mass of the Pal 3 HB is found to be very small—consistent with zero—and we argue that this is unlikely to be due to a statistical fluctuation. It is this small mass dispersion that leads to the most apparent difference in the HB morphologies of M3 and Pal 3. iii) The relative HB types of M3 and Pal 3, as measured by mean colors or parameters involving the number of blue, variable, and red HB stars, can easily be accounted for by a fairly small difference in age between these clusters, of order 0.5–1 Gyr—which is in good agreement with the relative age measurement, based on the clusters’ turnoffs, by VandenBerg (2000).