It is well known that the spectrum of non-normal operators can be highly unstable even under tiny perturbations. Exploiting this phenomenon it was shown in recent works by Hager, Bordeaux-Montrieux, Sjöstrand, Christiansen and Zworski that one obtains a probabilistic Weyl law for a large class of non-normal semiclassical pseudo-differential operators after adding a small random perturbation. We will discuss some recent results obtained in collaboration with Stéphane Nonnenmacher concerning the local statistics of eigenvalues of such operators. That is the statistical interaction between the eigenvalues on the scale of their average spacing.