S3 Fig.-Companion figure for the discussion of the decrease in the discrimination when a population is educated with $N^0_r$ rare ligands and $N^0_r + 1$ rare ligands are presented for discrimination.

![Diagram](image)

Figure 1: Evolution of the number of activated configurations when the number of rare ligands is sequentially incremented. On the top left, the set of self configurations with $N^0_r$ rare ligands are displayed. From these, a fraction $\alpha$ comprises those configurations leading to activation of T cells with the total highest magnitude. When an additional rare ligand the later configurations will remain activated and a fraction of the remaining $(1-\alpha)$ configurations will also lead to configurations with strong activations (indicated by dashed arrows and dashed circle). Overall, the fraction of the activated configurations will be $\delta$. If one now considers that self configurations have $N^0_r + 1$ rare ligands, since $\alpha < \delta$ only a subset of the later configurations – most activated of them – will lead to activated configurations. In this case, the magnitude required for activation is higher. Using the previous reasoning, that only a fraction of the least activated configurations become activated when an additional is displayed, then, when $N^0_r + 2$ ligands are displayed, the most activated configurations with $N^0_r + 1$ ligands will lead to activated configurations with $N^0_r + 2$ ligands; A fraction of configurations with intermediate activation (represented in light grey) will also be activated; Only a very minor fraction of configurations in white will become activated when $N^0_r + 2$ ligands are presented. Therefore, discrimination becomes poorer when the number of rare ligands displayed during education is higher and a rare is added for discrimination.