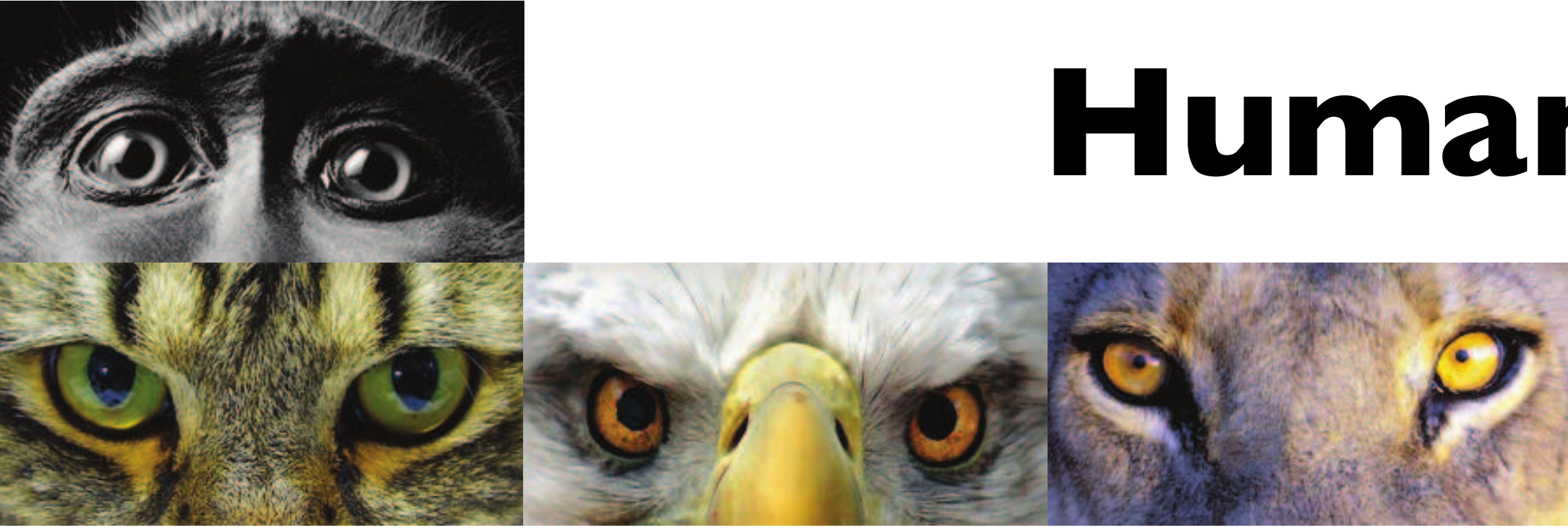


# Human binocular disparity estimation with natural stereo-images

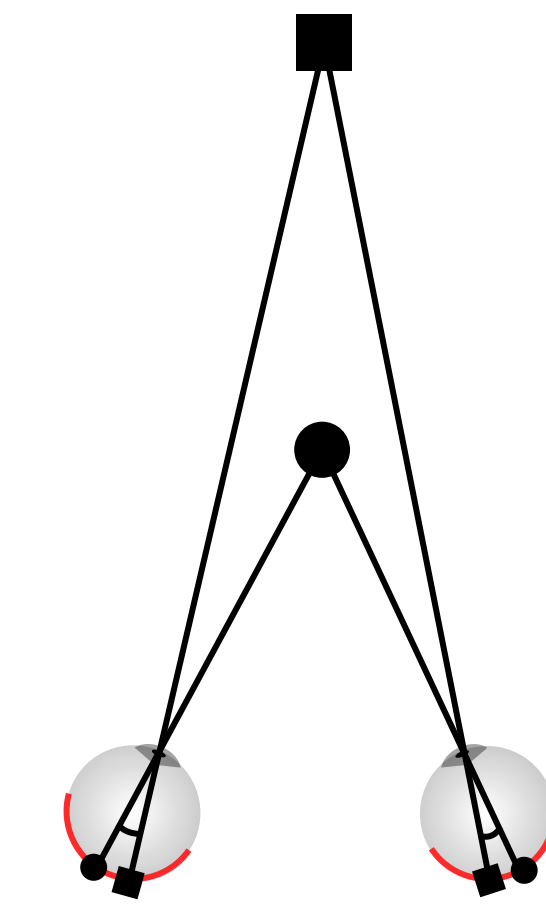
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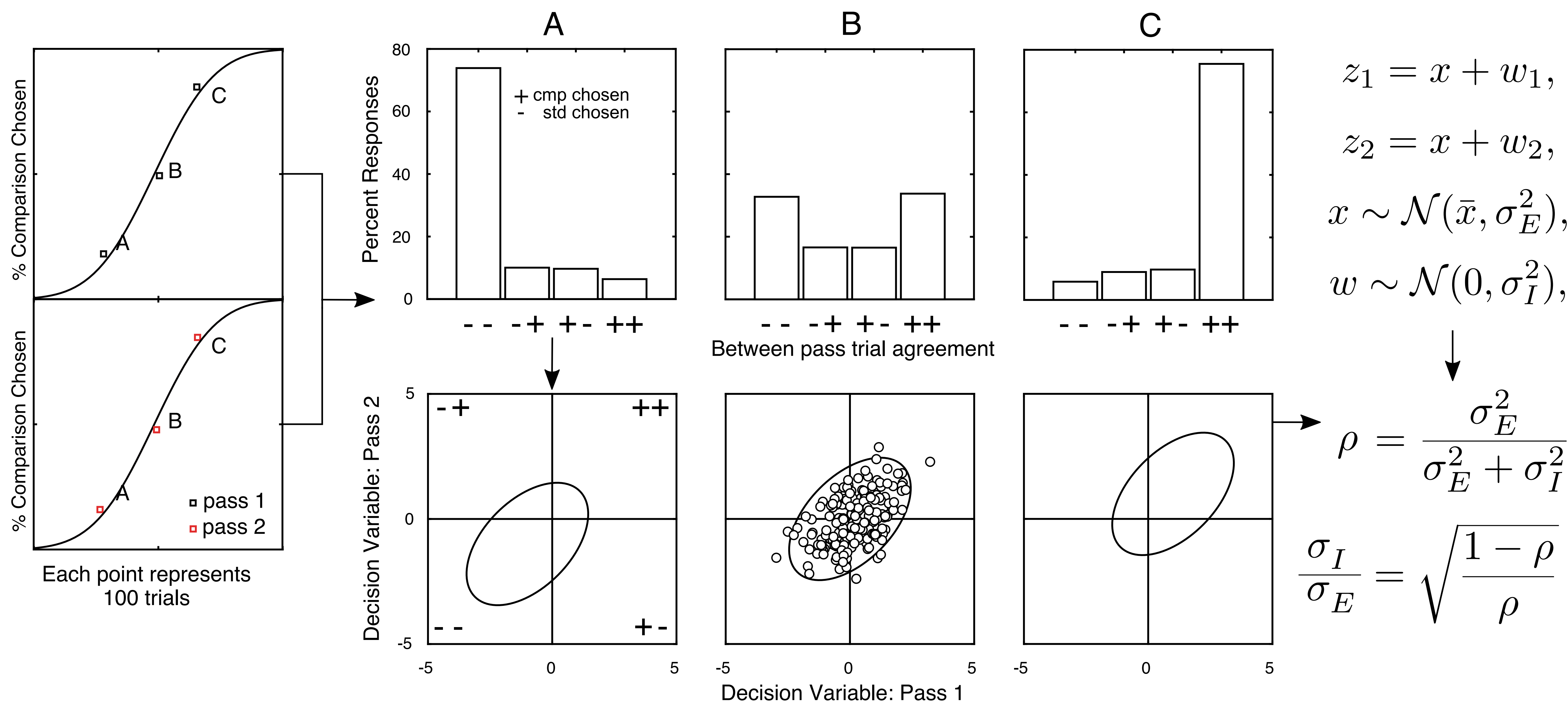
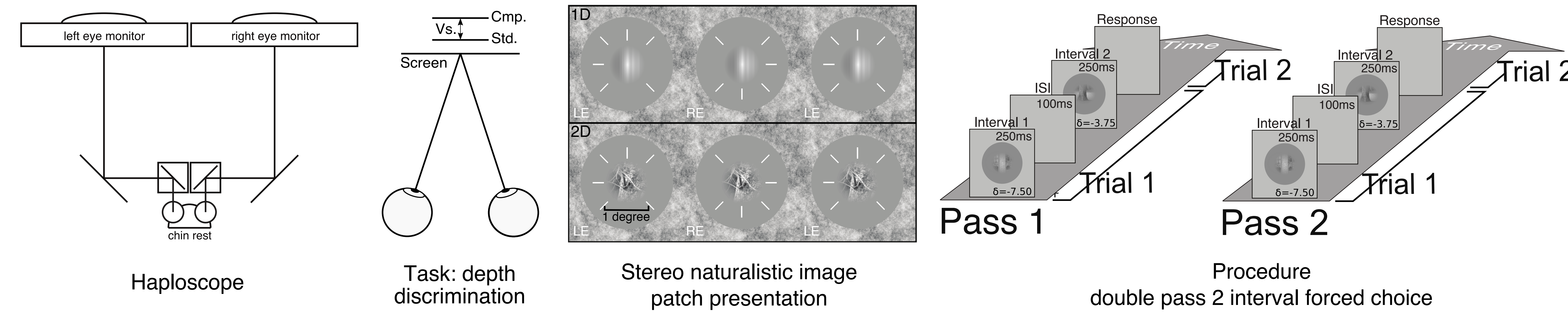


## Background

Binocular disparity is an important cue in depth-estimation, eye-fixation, 3D-movie-viewing. Binocular disparity is rarely studied under naturalistic conditions. Should we even care to study binocular disparity under natural conditions? We quantified natural scene variability's relative impact on disparity estimation performance.

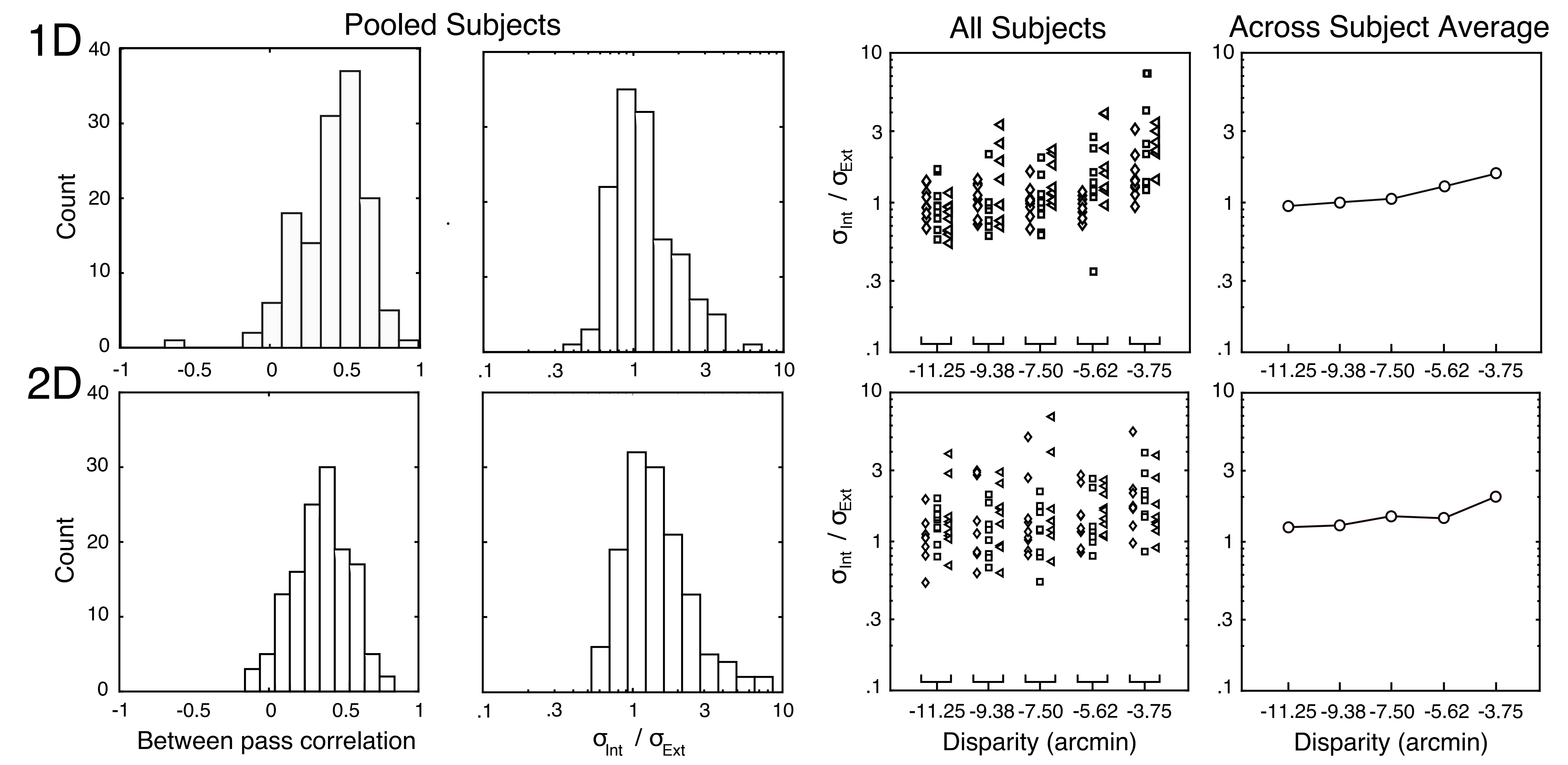
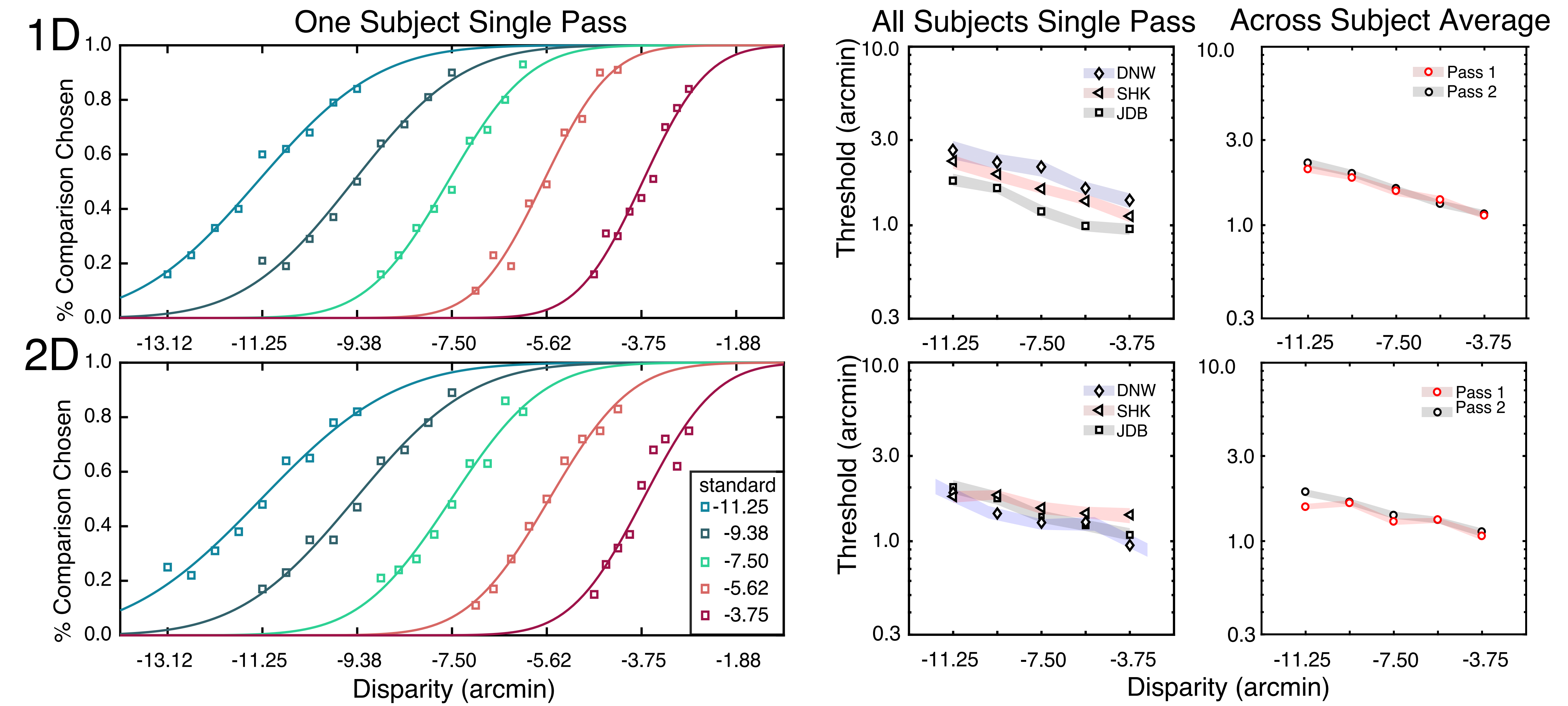


## Methods



A double pass paradigm allows calculation of agreement for each measured psychometric point. Agreement can be used to estimate the joint decision variable distribution, then decision correlation. From correlation, we measured the relative impact of internal versus external variability on perceptual judgment.

## Results



## Conclusions

Relative impact of internal uncertainty vs external uncertainty decreases with disparity. Ratio is close to 1 for all measured conditions in both 1D and 2D stimuli. Natural stimulus uncertainty affects disparity estimation nearly as much as internal uncertainty.