

# Whether and how individuals with ASD utilize prior belief during perceptual decision making : Evidence from an orientation categorization task

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## 1. Introduction

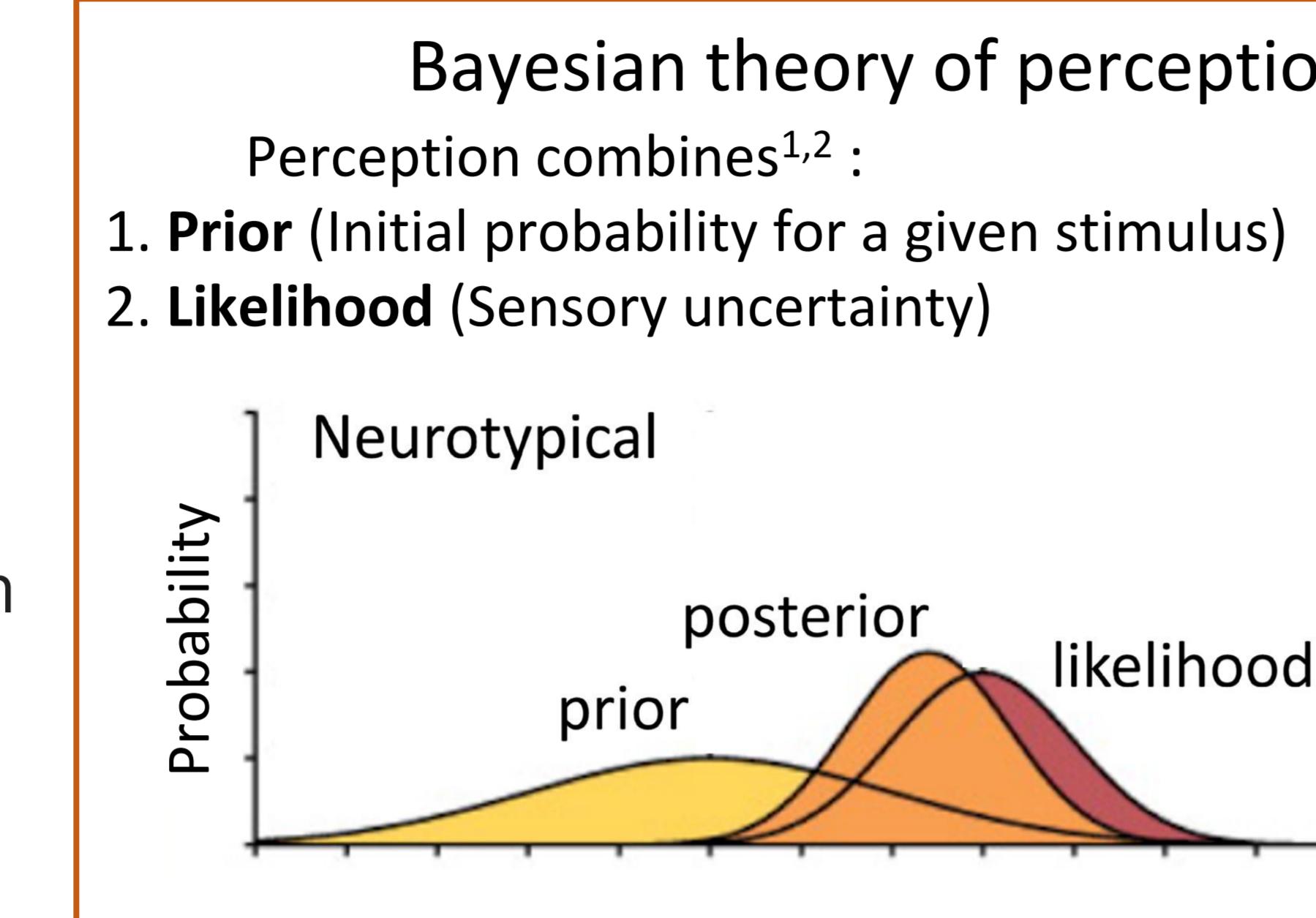
Atypical perception is a core phenotype of Autism Spectrum Disorder (ASD)<sup>3,4</sup>

A prevailing Bayesian view of ASD perception

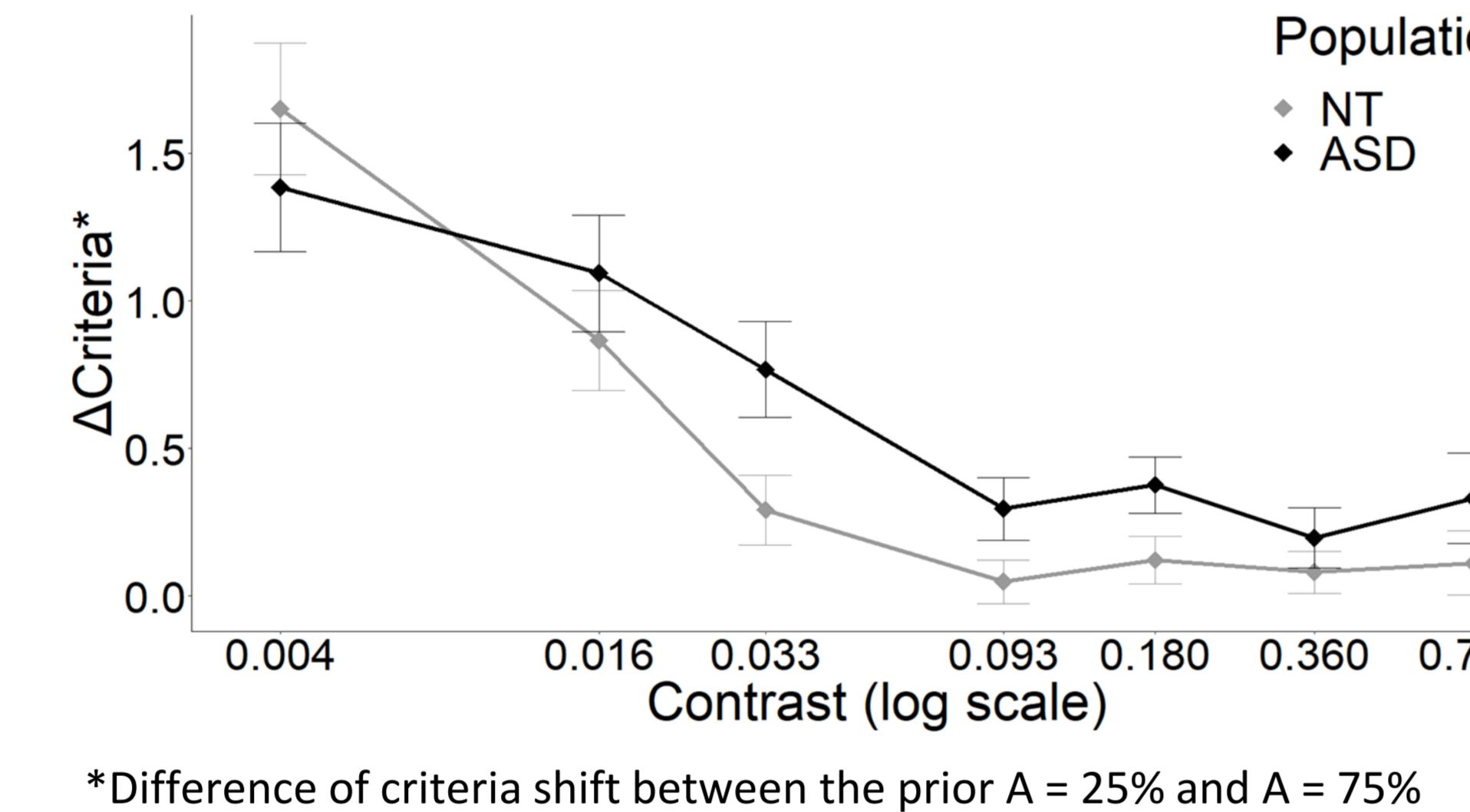
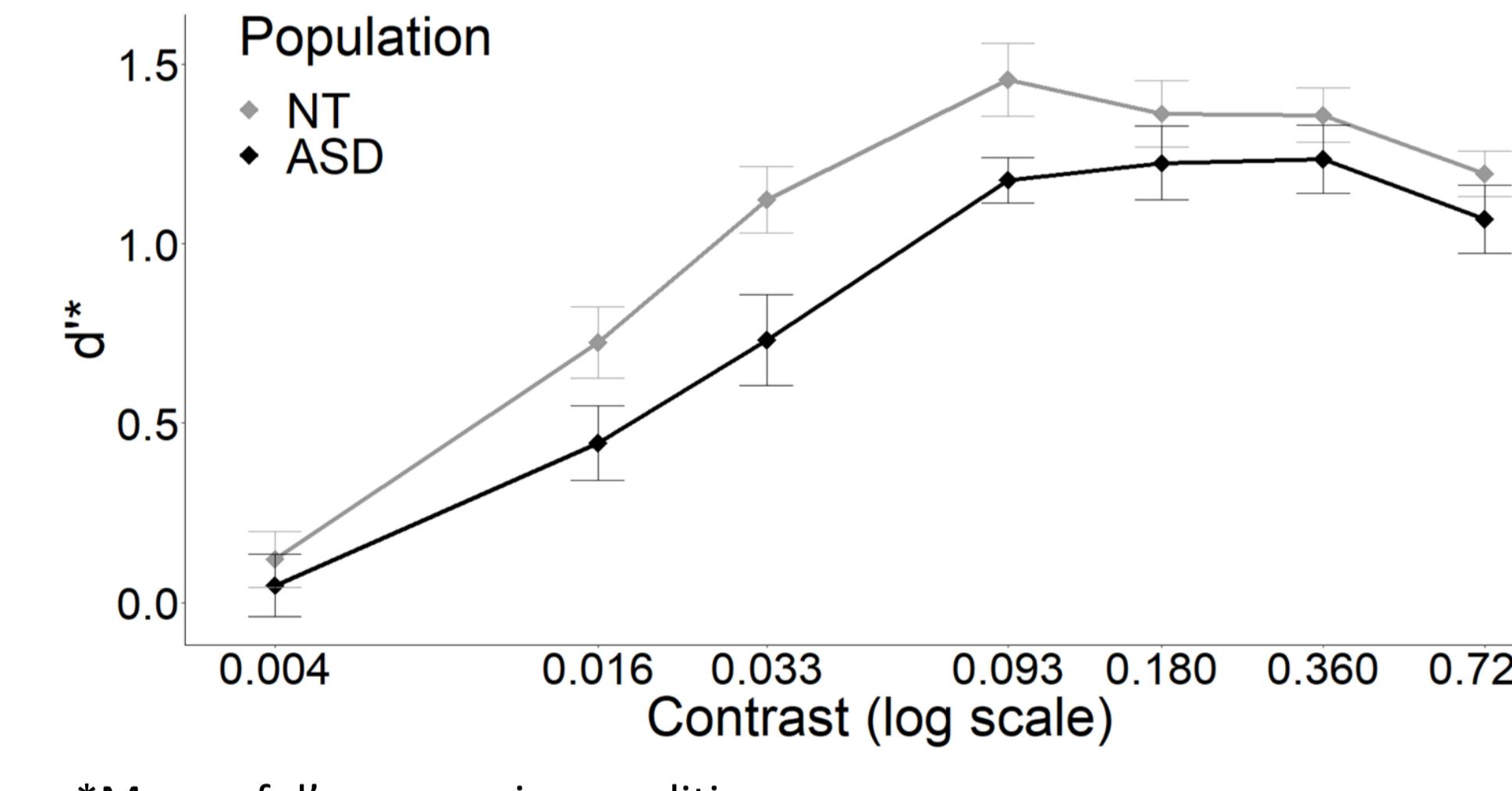
- Atypical perception in ASD is due to an **attenuated prior**<sup>5,6</sup>.
- Predicts that individuals with ASD will rely less on prior knowledge when making perceptual decisions

Aim of the study

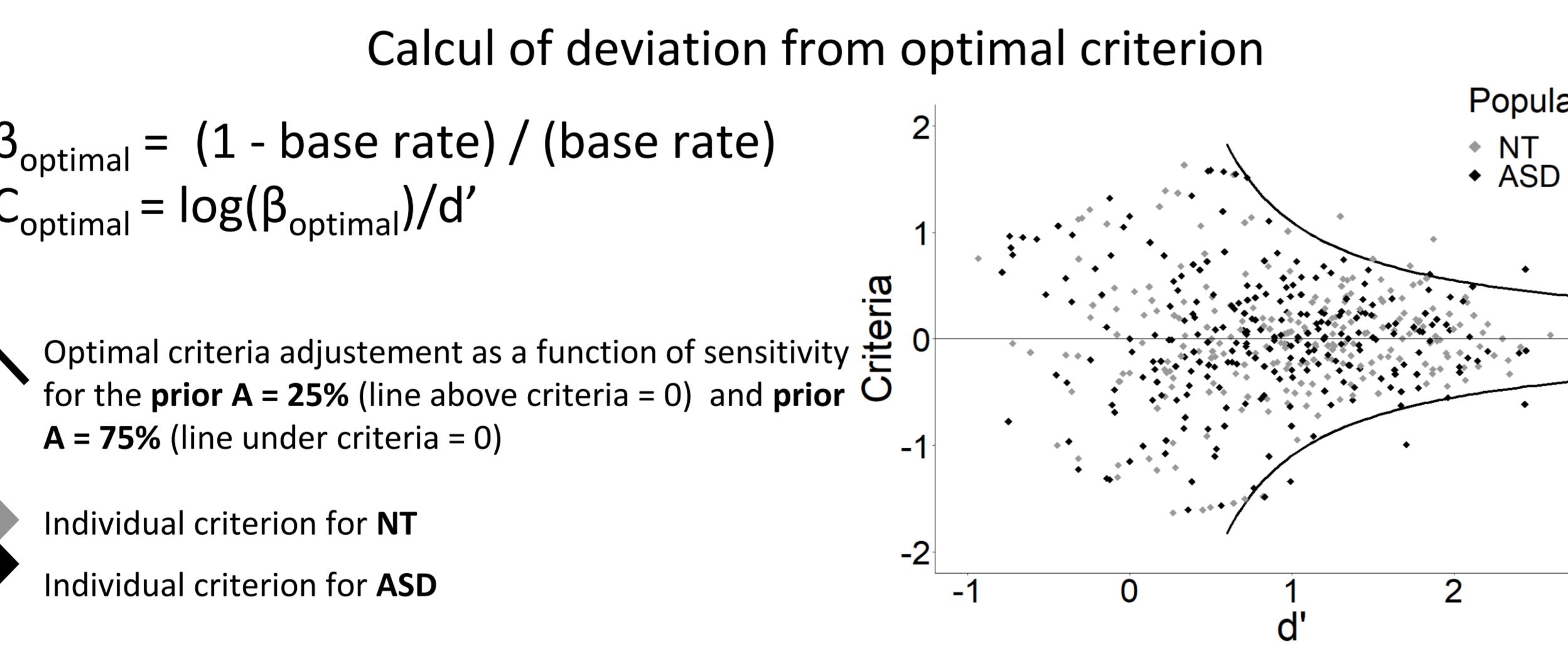
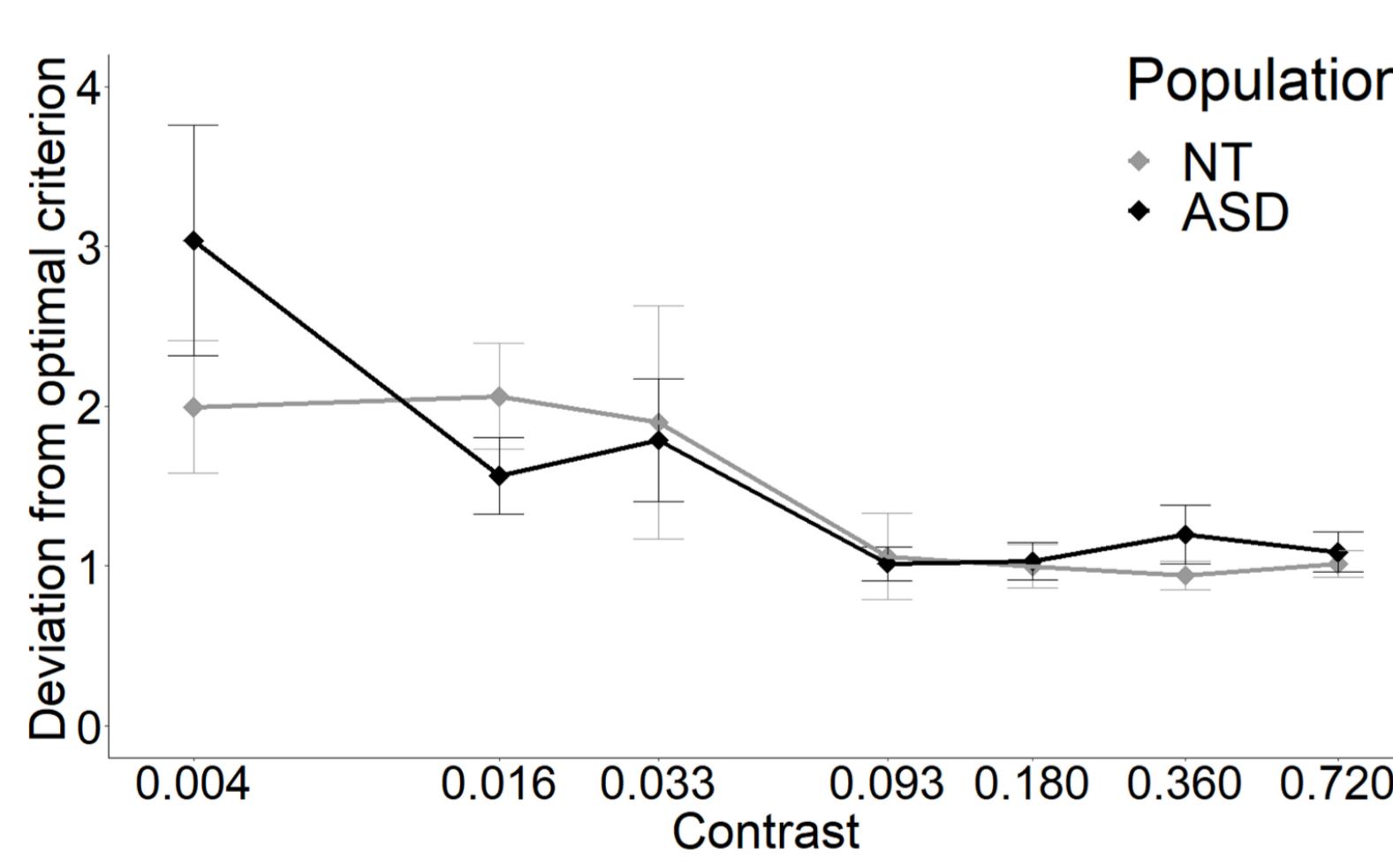
- Testing the hypothesis with a **perceptual decision-making task** using the framework of **signal detection theory**
- Answering the question : To what extent does **ASD incorporate prior knowledge** in perceptual and metacognitive decision making ?



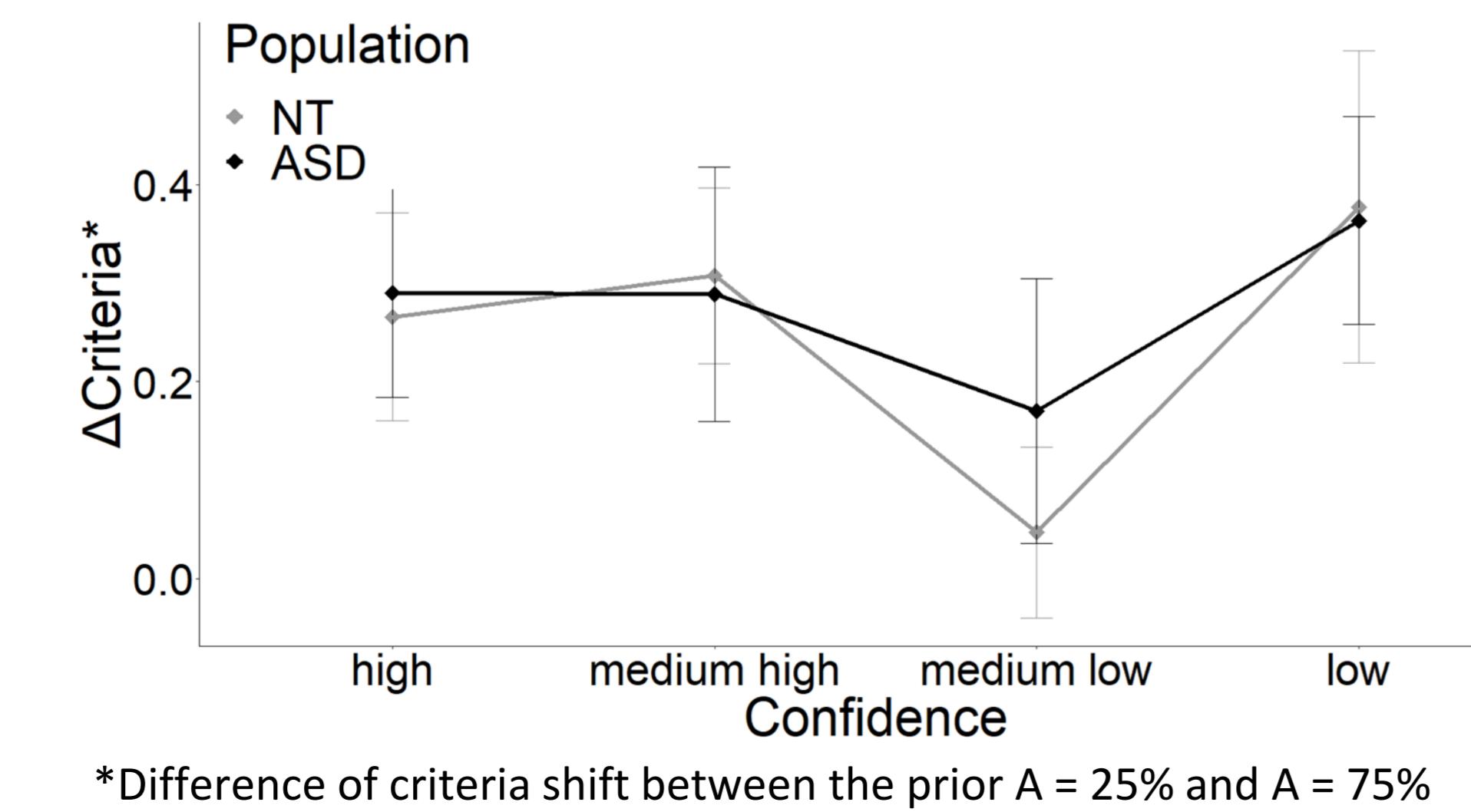
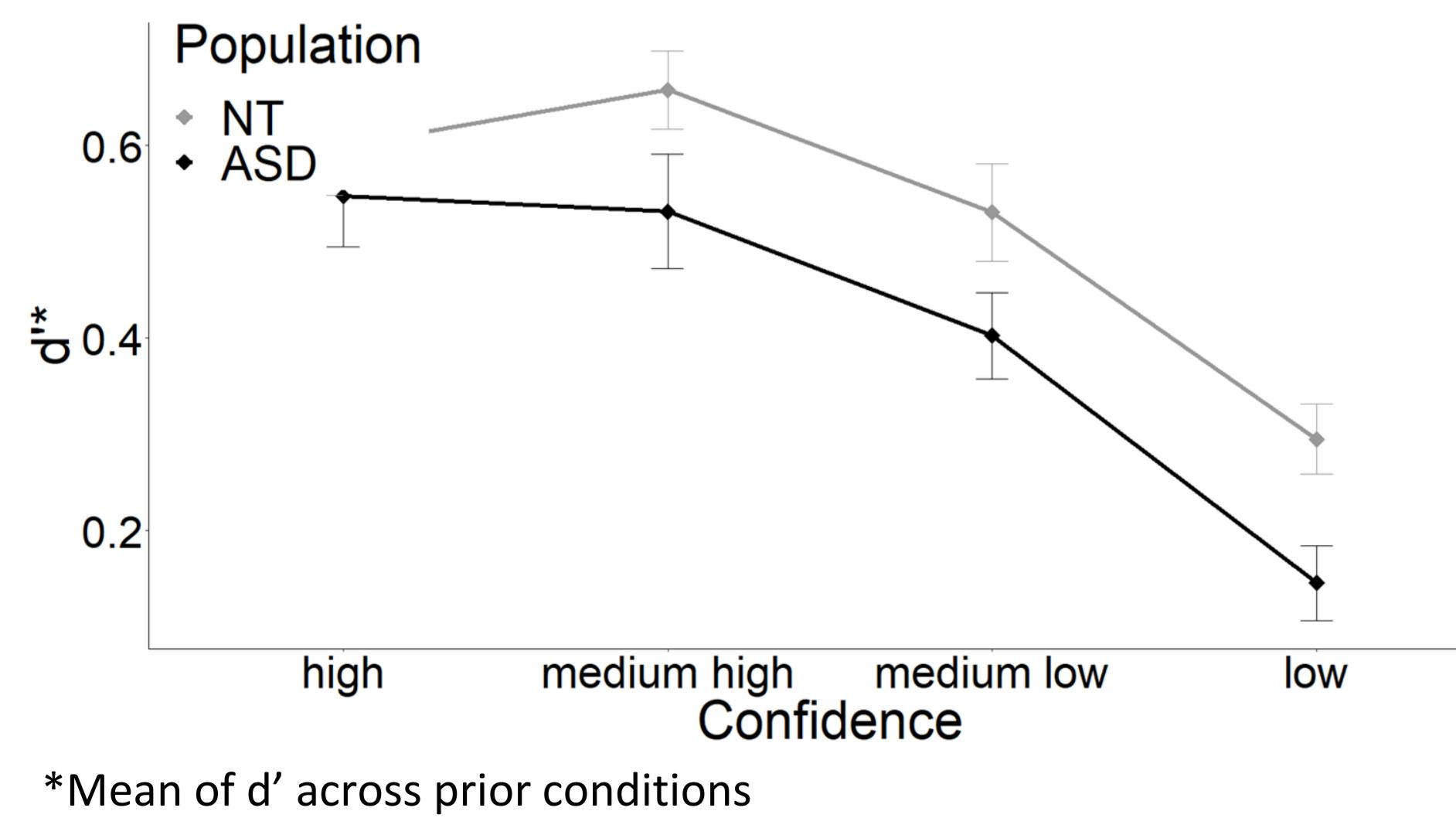
Overall lower sensitivity for ASD but similar relation between contrast sensitivity and criteria shift



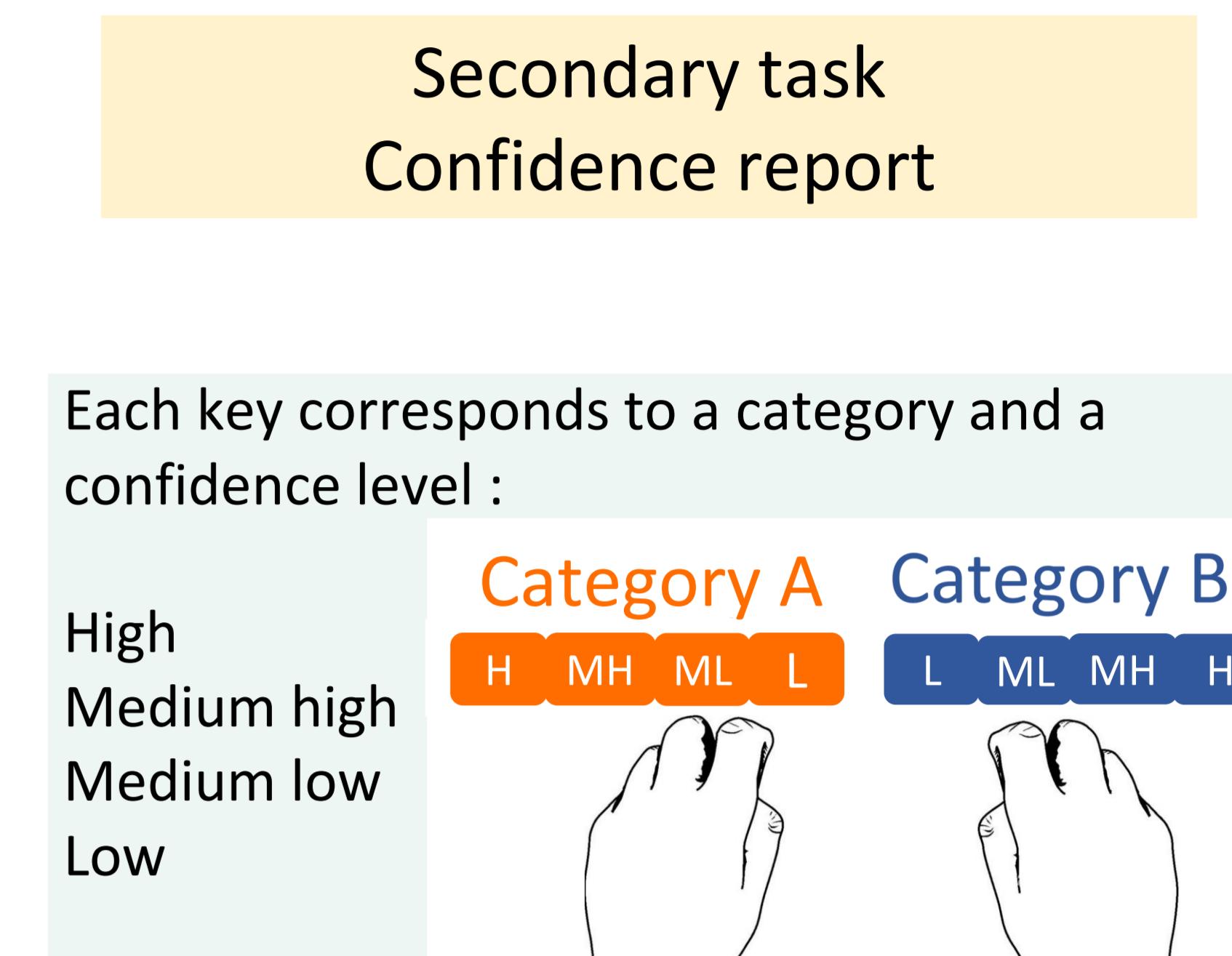
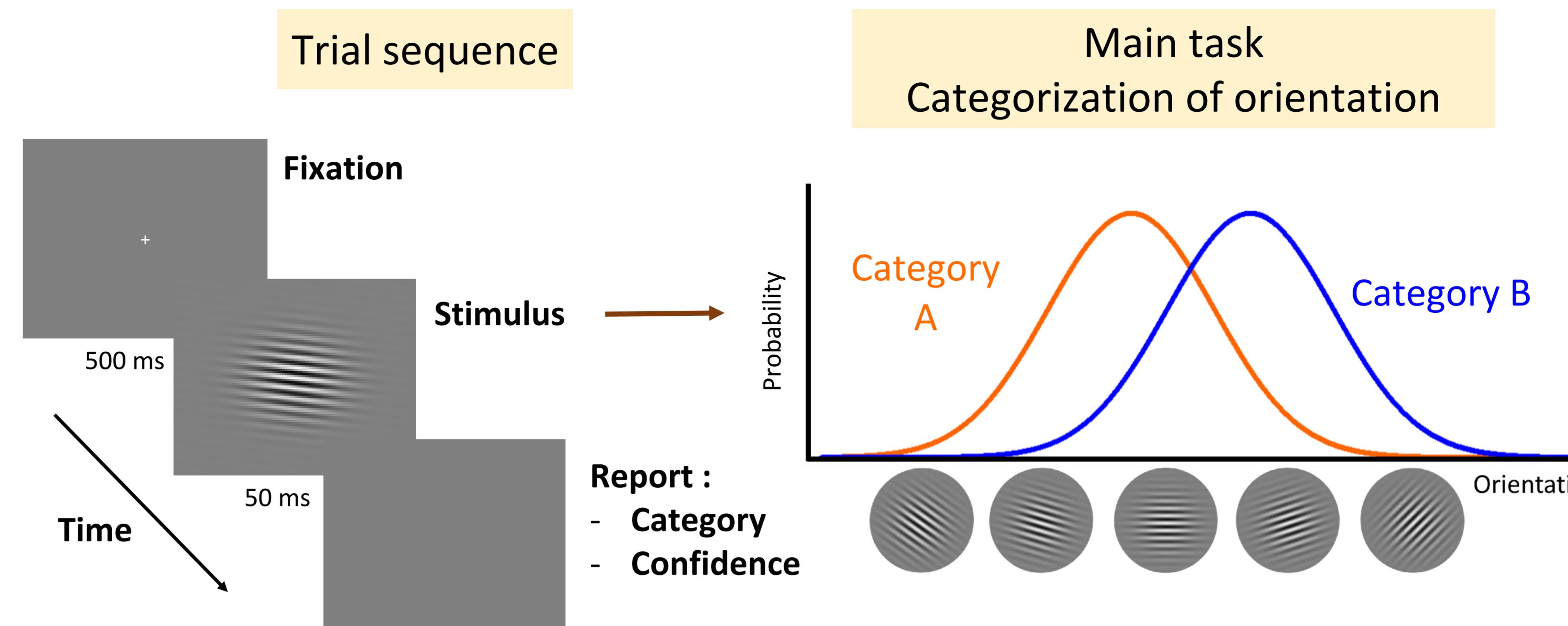
Similar sub-optimal performance



Similar pattern of confidence report

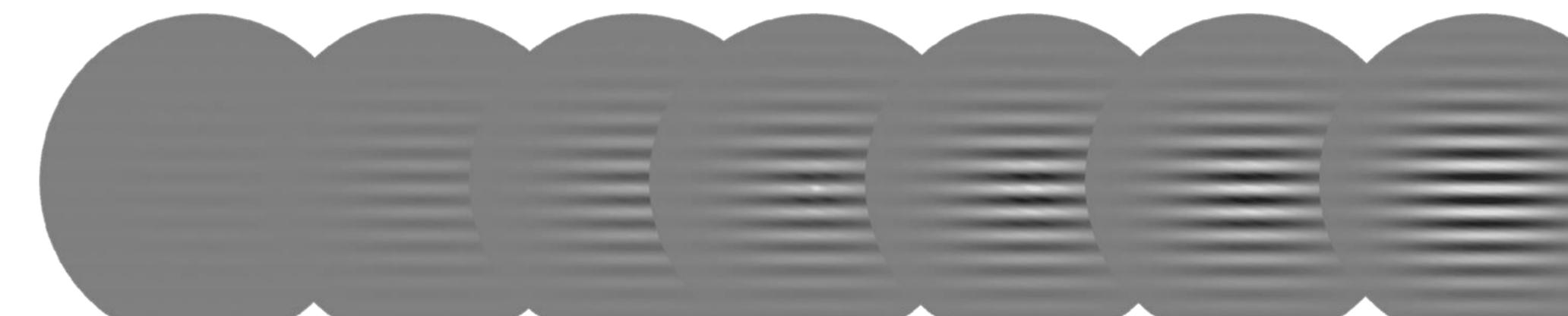


## 2. Method



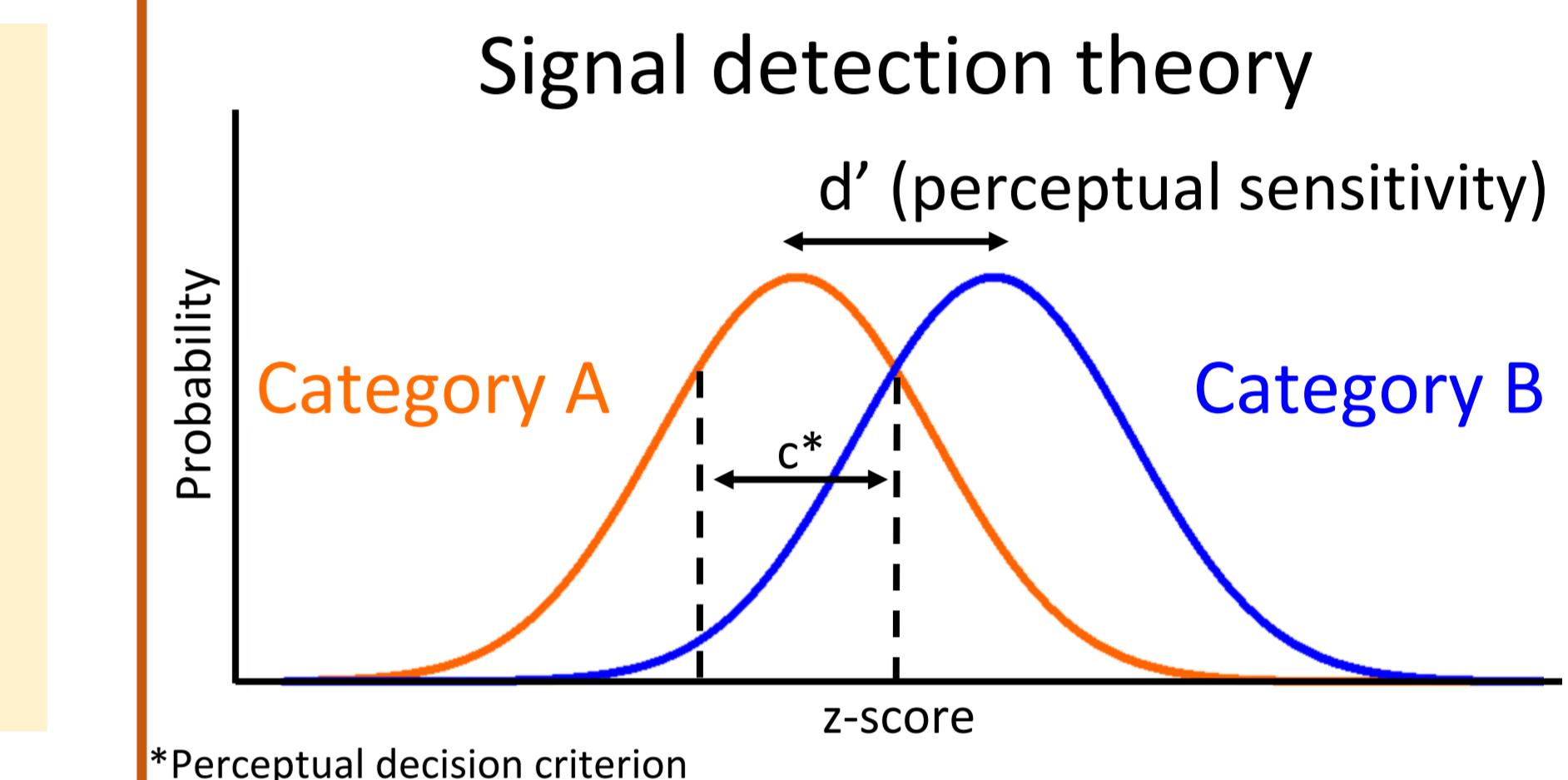
## 3. Results

Likelihood Manipulation  
With 7 levels of **contrast** to impact the  $d'$

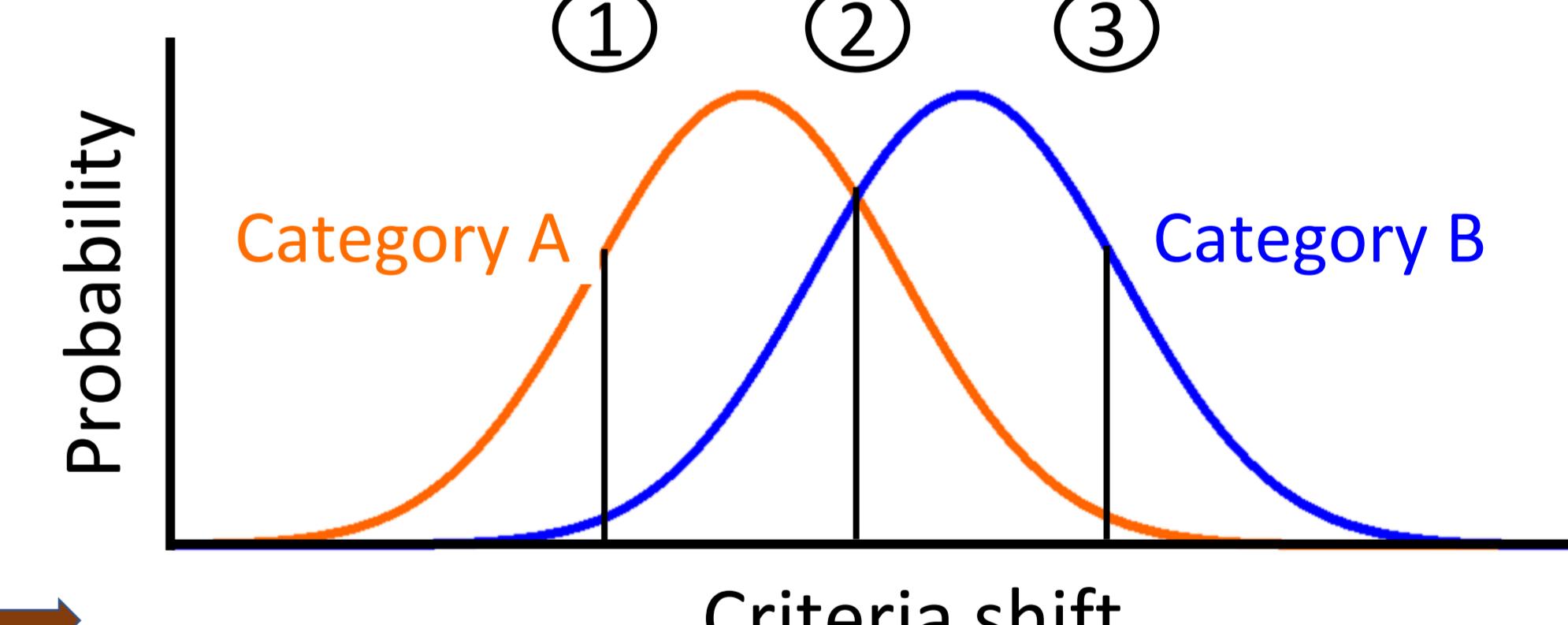
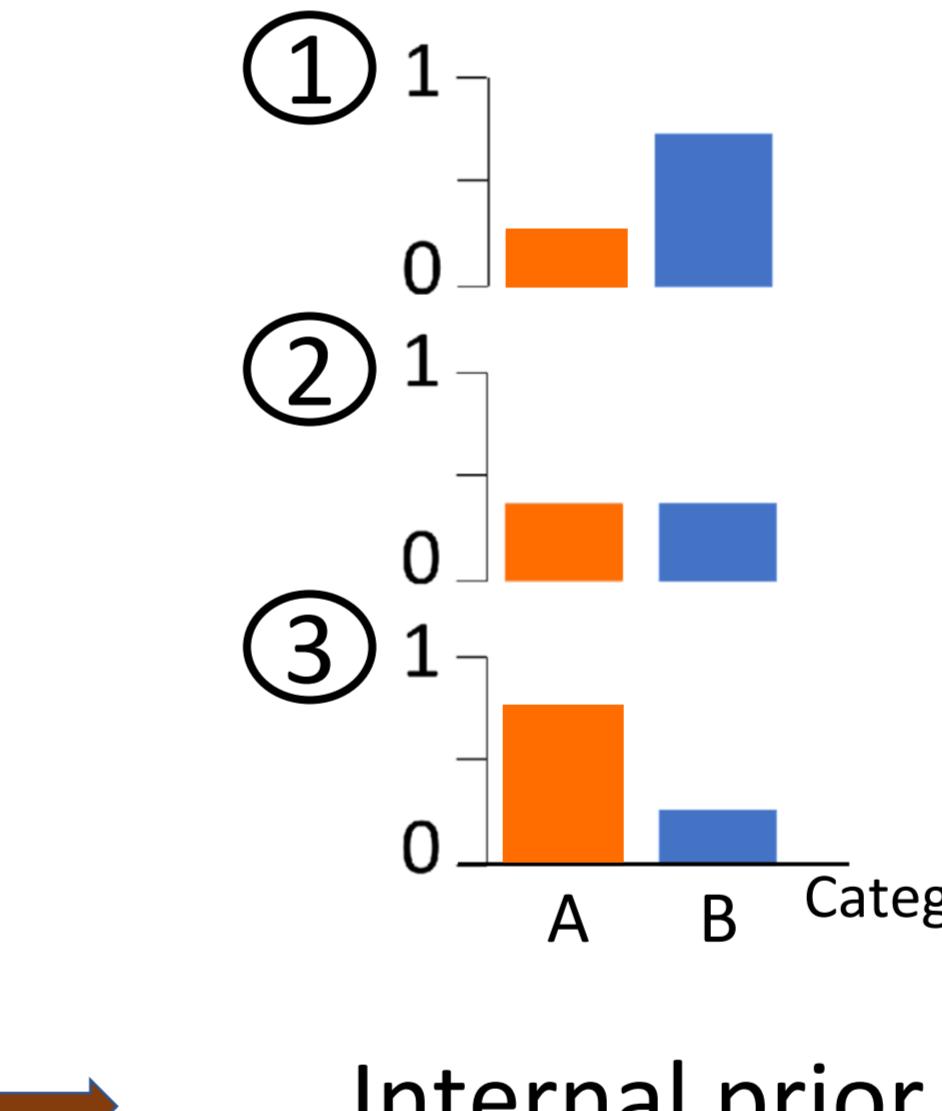
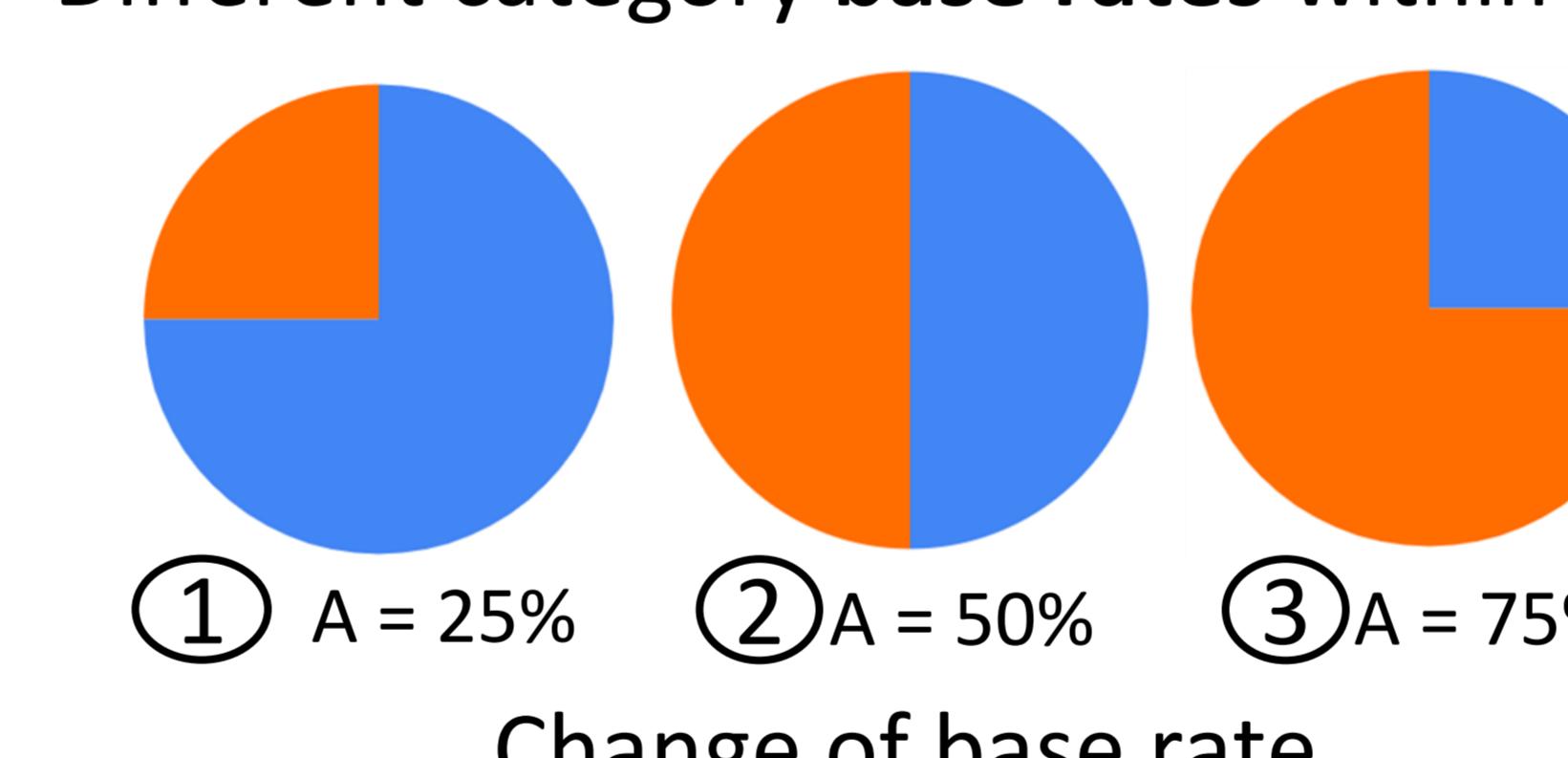


Population

- 21 ASD
- 26 Neurotypicals (NT)
- Measured variables : age, IQ (Toni score), AQ (Autistic quotient).



Prior manipulation  
Different category **base rates** within a block



## 4. Conclusions

In both populations :

- Perceptual sensitivity increases with contrast
- Decision criteria shift to account for prior information, with larger shifts when sensory evidence is weaker
- Criterion shifts are suboptimal to a similar degree in both groups
- Confidence ratings track perceptual sensitivity but don't predict criterion shifts

**Individuals with ASD use prior information similarly to NT in perceptual decision making**

## 5. References

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