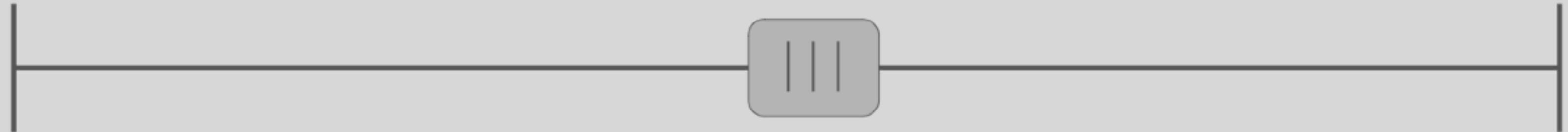


Adjust slider until the fruit is dissimilar to the reference



Reference item



Perpetual Adjustment Queries (PAQs)



Ordinal structure

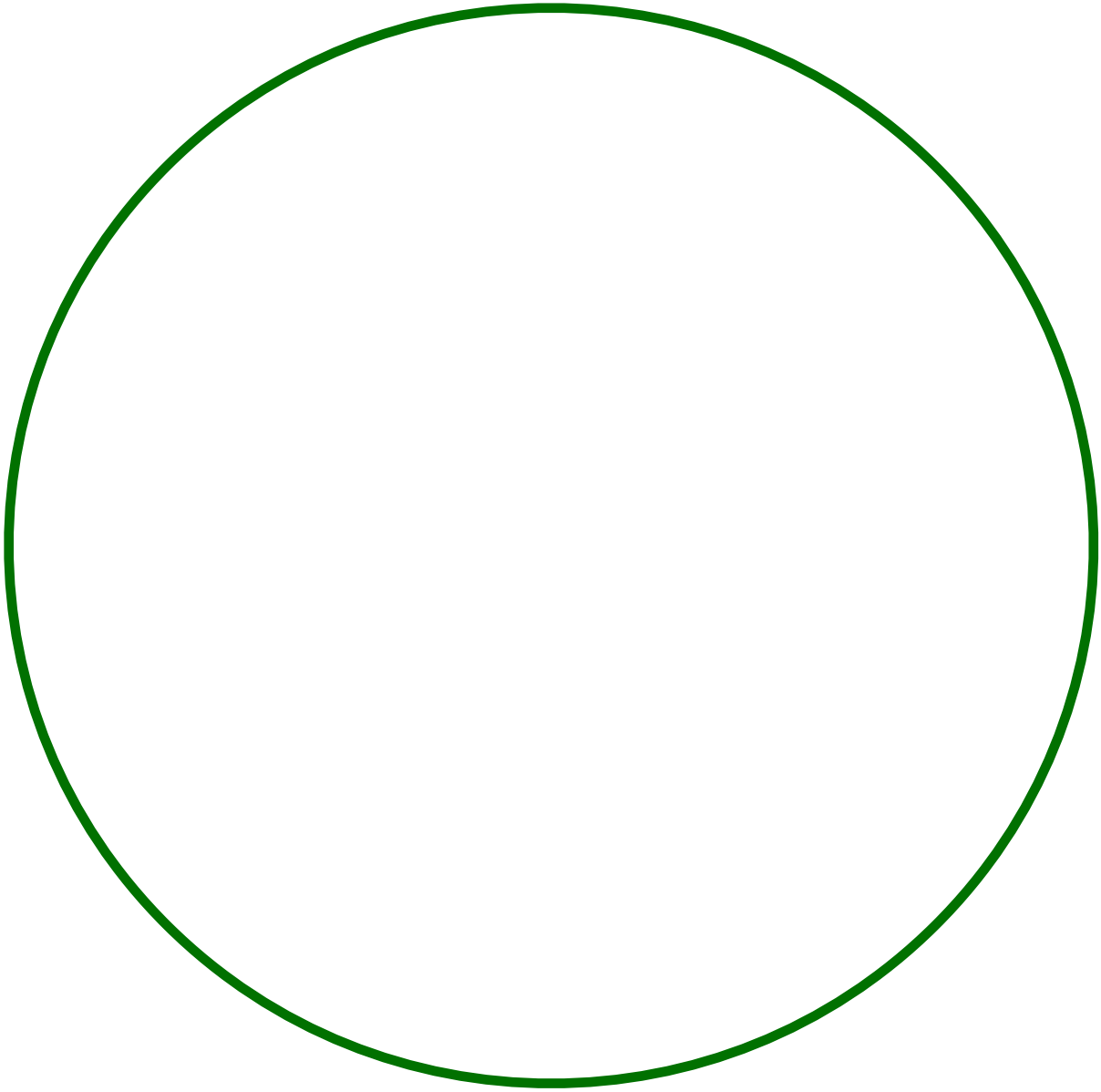
- + Lower cognitive burden [6]

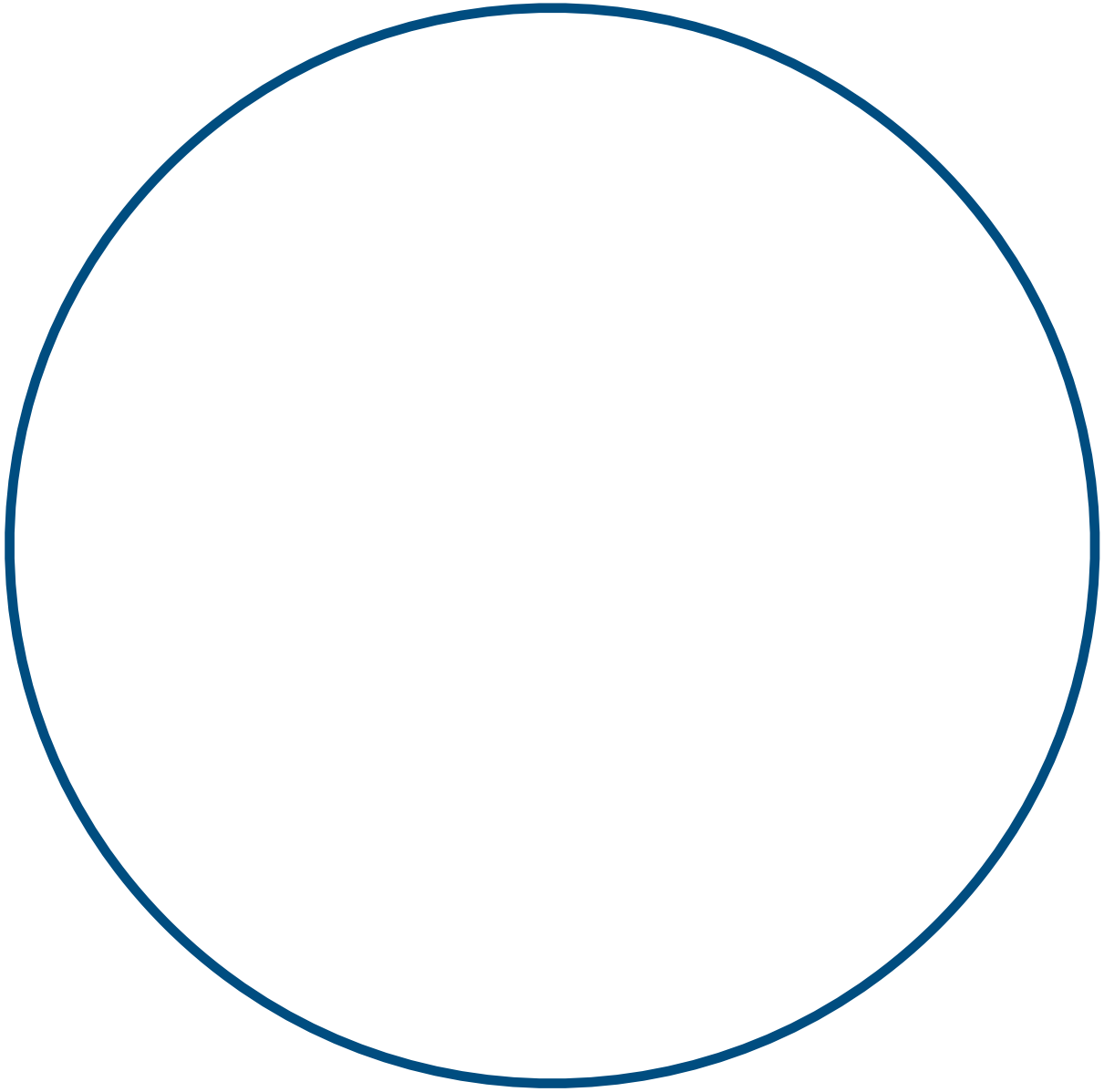
- + Provides context

Cardinal output

+ Expressive numerical output [7]

+ Elicits “hard examples” by design

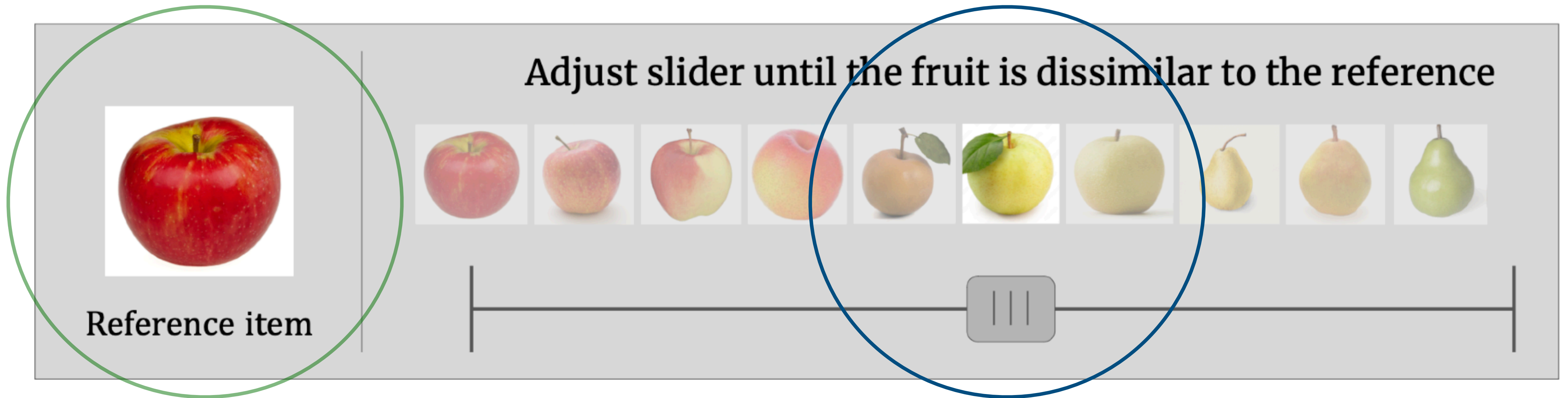




[6] Shahrata/. (2016)

[7] Wang and Shah (2019)

Perceptual Adjustment Queries (PAQs)



Ordinal structure

- + Lower cognitive burden [6]
- + Provides context

Cardinal output

- + Expressive numerical output [7]
- + Elicits “hard examples” by design

Distance-based perception model

- High-dimensional feature space \mathbb{R}^D , where each point corresponds to an item
- Perception governed by a low-rank Mahalanobis metric $\mathbf{M} \in \mathbb{R}^{D \times D}$, $\text{rank}(\mathbf{M}) = r, r \ll D$
- If two items are squared distance $< y$ apart under \mathbf{M} , they are considered “similar”
- **Goal:** Estimate \mathbf{M} from PAQ responses

