

Classical Psychophysical Methods

Outline

- **Method of Adjustment**
- Method of Limits
- Method of Constant Stimuli
- Probit Analysis

Method of Adjustment

- **AL:** the subject is asked to adjust the intensity of the stimulus so that it is just barely detectable. The value adjusted is taken as an estimate of the threshold.

Note the asymmetric nature of this experiment caused by the fact that the intensity of the stimulus is never negative: The subject is asked whether the stimulus is present (greater than zero), or absent (zero). This fact makes the estimate of AL very sensitive to

response bias

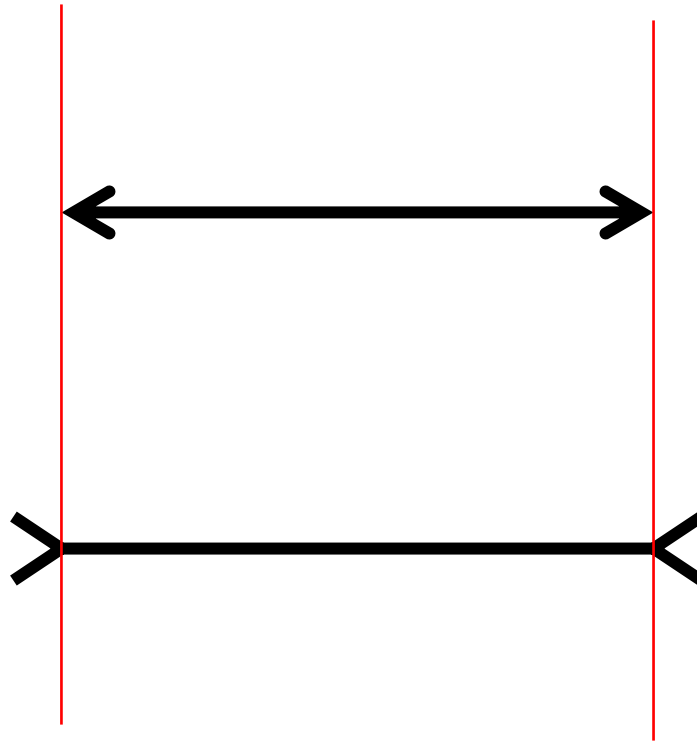
Method of Adjustment

- **DL:** the subject is asked to adjust the intensity of the test stimulus so that the difference between test and reference is **just barely detectable** (asymmetric version). The difference between the value adjusted and the intensity of the reference stimulus is taken as an estimate of the threshold.
- **DL:** the subject is asked to adjust the test stimulus so that it is **perceptually identical to the reference stimulus** (symmetric version). Standard deviation sd of the distribution of the adjustments is taken as an estimate of the threshold. The mean value m is an estimate of the point of subjective equality (PSE).

Exp. 1: Line length discrimination – symmetric version

- The subject runs 20 trials. In each trial the subject adjusts the length of the test line (l_t) so that it is perceptually equal to the length of the reference line (l_r).
- The frequency histogram of the adjusted length is plotted. Its parameters (mean m and standard deviation sd) are computed.
- The mean m is an estimate of PSE and the standard deviation sd is an estimate of DL.

The Müller-Lyer Illusion



Exp. 2: Müller-Lyer illusion

- The subject runs 20 trials. In each trial the subject adjusts the length of the test line (l_t) so that it is perceptually equal to the length of the reference line (l_r).
- The frequency histogram of the adjusted length is plotted. Its parameters (mean m and standard deviation sd) are computed.
- The mean m is an estimate of PSE and the standard deviation sd is an estimate of DL.

Discussion of Results

Asymmetric version	Symmetric version			
DL (<i>mean</i>) (in pixels)	PSE (<i>mean</i>) (in pixels)		DL (<i>sd</i>) (in pixels)	
Line length	Line length	Müller-Lyer	Line Length	Müller-Lyer

- Perceptual illusion is present when
 $(PSE - l_r) \gg DL$