Design questions

* What AOI are you interested in? What inaccuracy would change that?
* What visual angle are the areas of interest for the subjects (let them carefully record the distance.
* Should no-chin-rest trackers be only compared to others of the same kind (in addition to low- vs. high-speed ET, bi- vs. monocular? (Ooms, Dupont, Lapon, & Popelka, 2015)

## Sample

Expect that 5%-60% of the sample can be excluded due to error (Holmqvist, Nyström, & Mulvey, 2012)

# Expected ES

## Glasses

* (Nystrom, Andersson, Holmqvist, & van de Weijer, 2013) found an effect size of mean difference in offset 13.6cm (0.3146° at 67cm distance) for contacts and **8.4cm** (0.1975° at 67cm distance) difference for glasses. They had n=**149** people.
* Precision (calculated as the Root-Mean-Square of the offset), Nystrom et al. (2013) found an effect of -.2457° difference for contact lenses and 0.4094° for glasses.
* In room light conditions, better quality without glasses. Wilcoxon-Rank-Test, Z=-1.94, 40cm viewing distance (Paulus, Remijn, Syn, & Hiramatsu, 2017), 16 people. Chin rest. Theory: Reflection of glare and glasses frame that occludes the sight.
* N=10, 0.02° difference for glasses, d= 200cm, Dikablis(ErgoneersGmbH,Germany)mobile(head-mounted)infra-redeye-tracker (Stuart et al., 2016)

## Light

* Z=-1.915, N=30 (check later for transformation, Good <0.7°vs. Moderate <1.0°, which is around **0.3° difference, on 40cm that is an offset of 12.37cm** (0.3° at 40cm distance). (Paulus et al., 2017)
* **4.57 (0.11°)** between room light and natural light. (Paulus et al., 2017)
* Remote video-based eye-trackers, Tobii EyeX [45] and SMI REDn Artificial vs. daylight, 0.1-0.15 cm better at 65cm from screen for daylight N=80, Tracking quality did not change during the experiment. Without filter, they recommend AOI’s of 3.28\_3.78 cm (65cm distance), (Feit et al., 2017)

## Head movement

* (Blignaut & Wium, 2014) report a difference of **0.7°** between tower-mounted ET and remote. They cite many more accuracy scores for eye-trackers
* D=200cm, No evidence for head movement (sitting, standing, walking) for a Dikablis(ErgoneersGmbH,Germany)mobile(head-mounted)infra-redeye-tracker (Stuart et al., 2016)

Free head:

* 1°, referring to Komogortsev and Khan (2008)
* 0.5 (Thomas & Spencer, 2007).
* 1.1 Zhang & Hornoff, 2011)
* 0.77-0.95 (Gray and Ji (2008))
* 0.8 (Brolly & Mulligan)
* 1-2 (review, Hansen and Ji (2010))
* 1° (Pieter Blignaut, Kenneth Holmqvist, Marcus Nyström, and Richard Dewhurst. 2014. Improving the Accuracy of Video-Based Eye Tracking in Real Time through Post-Calibration Regression. In Current Trends in Eye Tracking Research. Springer International Publishing, Cham, 77–100.)

Mounted:

* 0.3, referring to Holmqvist et al., 2011; Jarodzka et al., 2010)
* 0.63-0.72 (Van der Geest and Frens (2002)

## Ethnicity

Asians have a lower accuracy (0.91-0.61 = 0.3°) than Caucasians (Blignaut & Wium, 2014), no difference between African and Caucasian n=71.

## Data quality

An error-correction-method based on clustering can improve the accuracy from 0.3° to 0.1° deviation, i.e. by 0.2° (Zhang & Hornof, 2011).

# Good to know

* Cite Karatekin, 2007 for a review on Eye-Tracking (Dalrymple, Manner, Harmelink, Teska, & Elison, 2018).

# Questions

What are “large distances” between the AOI’s at (Zhang & Hornof, 2011)?

Go/No-Go task to maintain attention? (Feit et al., 2017)

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