



LUND UNIVERSITY

Eye-movement data quality over time and the influence of awareness of being eye-tracked

Niehorster, Diederick C; Zemblys, Raimondas; van de Weijer, Joost; Holmqvist, Kenneth

2016

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Niehorster, D. C., Zemblys, R., van de Weijer, J., & Holmqvist, K. (2016). *Eye-movement data quality over time and the influence of awareness of being eye-tracked*. Abstract from The Scandinavian Workshop on Applied Eye Tracking 2016, Turku, Finland.

Total number of authors:

4

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

Eye-movement data quality over time and the influence of awareness of being eye-tracked

Diederick C. Niehorster¹, Raimondas Zemblys², Joost van de Weijer¹, & Kenneth Holmqvist¹

¹ Lund University, ² Siauliai University

To design an experiment that will yield sufficient power, it is important to understand your measurement device and the data quality it produces. Recent work has provided a complete exposé of eye-tracking data quality as a function of screen location and participant characteristics for a series of popular eye-trackers. These results are however based on recordings done within a few minutes after calibration, while in practice experiments often last an hour or more. As such, a description of data quality over time is needed to design experiments that maintain sufficient power for their whole duration. Furthermore, eye-tracking is sometimes done covertly, without the participant being aware that they're eye-tracked. Here we look at the influence this has on data quality.

57 participants participated in an experiment that took approximately 2 hours and consisted of a series of tasks. In between these tasks, a display was shown containing 13 points displayed in random order for 1 second each while participants were asked to look at these points. Participants' eye-movements were recorded with an SMI RED-m at 120Hz, which was calibrated at the start of the experiment. After calibration, participants were either told they're being eye-tracked, or that eye-tracking would only start later during the experiment but that calibration is performed beforehand to avoid later interruption of the experiment.

The results show that accuracy and precision decrease over time. Furthermore, dataloss increases over time. While average accuracy worsened for both the horizontal and vertical recorded gaze positions, only the vertical coordinate showed increasing bias (downward) over time. Information about the participants' position in the headbox will be used to further elucidate worsening data quality over time. Last, the data provided evidence that awareness of being eye tracked did not affect data quality or the rate at which it worsened over time.