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Data Article

Data on eye behavior during idea generation and letter-by-letter reading

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ABSTRACT

This article includes the description of data information from an idea generation task (alternate uses task, (Guilford, 1967) [1]) and a letter-by-letter reading task under two background brightness conditions with healthy adults as well as a baseline measurement and questionnaire data (SIPI (Huba et al., 1981) [2]; DDFS (Singer and Antrobus, 1972) [3], 1963; RIBS (Runco et al., 2001) [4]). Data are hosted at the Open Science Framework (OSF): https://osf.io/fh66g/ (Walcher et al., 2017) [5]. There you will find eye tracking data, task performance data, questionnaires data, analyses scripts (in R, R Core Team, 2017 [6]), eye tracking paradigms (in the Experiment Builder (SR Research Ltd., [7]) and graphs on pupil and angle of eye vergence dynamics. Data are interpreted and discussed in the article 'Looking for ideas: Eye behavior during goal-directed internally focused cognition' (Walcher et al., 2017) [8].

Specifications Table

Subject area	Psychology
More specific subject area	Cognitive Psychology, Eye Tracking
Type of data	Tables, text files, graphs, code

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How data was acquired	Eye tracking: EyeLink1000Plus, surveys
Data format	Raw, processed, analyzed
Experimental factors	Participants ($N=50$) performed two tasks (letter-by-letter reading task and idea generation task) under two background brightness conditions (bright: rgb(204,204,204), dark (102,102,102)). One practice and eight 60 second trials were presented per task, half under bright half under dark background condition. During the idea generation task, a non-sense letter-by-letter string was presented. Task performance was assessed after each trial. Additionally, a baseline measurement was obtained where participants were asked to fixate a fixation cross for 60 seconds.
Experimental features	Eye tracking data were obtained during letter-by-letter reading, idea generation and a baseline condition.
Data source location	Department of Psychology, University of Graz, Graz, Austria
Data accessibility	Data are hosted at the Open Science Framework (OSF): https://osf.io/fh66g/ [5]

Value of the data

- Raw eye tracking data of 50 participants useful for reanalysis by other scholars.
- Useful for meta-analyses on effects of internally-directed cognition on wide range of oculometric parameters.
- Top two ideas of 50 participants on nine 60 s alternate uses trials useful for evaluation of task and future application.
- Data on mind wandering and imaginal processes related questionnaires useful for analyses of reliability and associations between them and with eye behavior.
- R-script for the calculation of angle of eye vergence from gaze position data is provided and can be used by other scholars.

1. Data

Data [5] provided at the Open Science Framework (OSF) include demographic information for each participant, eye tracking data, task performance measures, questionnaire data, R-scripts, instructions and visualizations of additional analyses. At OSF, data [5] are organized in three main components (see Fig. 1): '1 Methods and Measures', '2 Data' and '3 Additional Data'.

In the component '1 Methods and Measures', you find the eye tracking paradigms in the subcomponent '1.1 Experiment Builder'. We wrote the eye tracking paradigms with the manufacturers Software Experiment Builder [7] and can only opened with this software.

Instructions of each task and questionnaires are hosted in the subsection '1.2 Instructions and questionnaires'. The R-scripts used to analyze eye-tracking data of the idea generation and letter-by-letter reading task are in the subsection '1.3 R-scripts for data analyses'. Fig. 2 provides information on how to use those R-scripts.

In the component '2 Data' you find the complete data set used for all analyses and the raw data in the subsection '2.2 Raw Data'. '2.2 Raw Data' has separate sections for the tasks ('2.2.1 internal and external task', '2.2.2 baseline measurement'). Eye tracking raw data, demographic data and responses to questionnaires are within those subsections. Sections '2.2.1.1 and 2.2.2.1 Sample reports' comprise 500 Hz raw data in text format for each participant on gaze position, pupil diameter and events. Sections '2.2.1.2 and 2.2.2.2 Trial reports' host raw trial-wise statistics on saccades, blinks and fixations. Sample reports and Trial reports were generated with the DataViewer Software [11]. The edf-files (special file format used by the Software of SR-Research) are in the sections 2.2.1.4 and 2.2.2.3.