CODECHECK certificate 2024-001

https://doi.org/10.5281/zenodo.10823246

Item	Value
Title	Regulation of pupil size in natural vision across the human lifespan
Authors	Rafael Lazar , Manuel Spitschan
Reference	Royal Society Open Science (in press) https://osf.io/zrksf/
Codechecker	Stephen J. Eglen
Date of check	2024-03-15 21:00
Summary	R code to generate all of the key figures in the paper.
Repository	https://github.com/codecheckers/LazarEtAl_RSocOpenSci_2024

Table 1: CODECHECK summary

Output	Comment	Size (b)
`06_output/dem_tab.pdf`	manuscript Table 1	136605
`06_output/agepyr_plot.pdf`	manuscript Figure 2	4878
`06_output/weath_panels.pdf`	manuscript Figure 3	35823
`06_output/dataloss_plot.pdf`	manuscript Figure 4	5837
`06_output/lightcomp_panels.pdf`	manuscript Figure 5	1068448
`06_output/agecomp_plot.pdf`	manuscript Figure 6	22959
`06_output/age_panels1.pdf`	manuscript Figure 7	22766
`06_output/age_panels2.pdf`	manuscript Figure 8	10112

Table 2: Summary of output files generated

Summary

This was a reproduction of a paper currently in-press for Royal Society Open Science. The R code was straightforward to execute and reproduced all the Figures (2-8) in the main article. Supplementary files were also generated but were not included here for brevity.

CODECHECKER notes

This project was created in R. The README of the project provided a comprehensive overview of the structure of the project, and the steps required to reproduce the figures. Another highlight of the project structure was its use of the renv package to explicitly state which R packages (and their versions) should be installed. The call to `renv::restore()` in the project root took approximately 30 minutes on my laptop to install the 199 packages.

```
setwd("LazarEtAl_RSocOpenSci_2024")
renv::restore()
```

Once the packages were installed, the steps involved were fairly straightforward – all assuming the working directory was the root of the project.

As noted however in the README, when running the code on a mac (as I was), `device=cairo_pdf` arguments needed deleting (from files `40_demographics.R` and `52_figures&tables.R`). The code was then evaluated in the following logical order:

```
source("01_surveydata/10_surveydata_prep.R")
source("02_rawdata/20_rawdata_import.R")
source("02_rawdata/21_qualitychecks.R")
source("02_rawdata/22_categorisation.R")
source("03_datamerge/30_datamerge.R")
source("04_demographics/40_demographics.R")
source("05_analysis/50_subdatasets.R")
source("05_analysis/51_hypotheses.R")
source("05_analysis/52_figures&tables.R")
```

The output files were placed in the `06_output` folder.

Recommendations

1. As the code can all be run without any interaction, I would suggest making a simple (shell or R) script that deletes any intermediate files, and then evaluates all the steps in the correct order.
2. The code generates many warnings, mostly caused when packages are loaded. It might be helpful to silence those warnings that can safely be ignored.
3. Unless the argument 'device=cairo_pdf' is necessary on a particular platform, I'd suggest deleting that call from your scripts so that they are more portable. (Alternatively, include comnditionals based on the operating system to check whether the device parameter can be included.)
4. I already had Chrome installed on my system, but as you use the package `chromote`, it might be worth clarifying whether Google Chrome or another suitable browser must be installed.

Manifest files

dem_tab.pdf

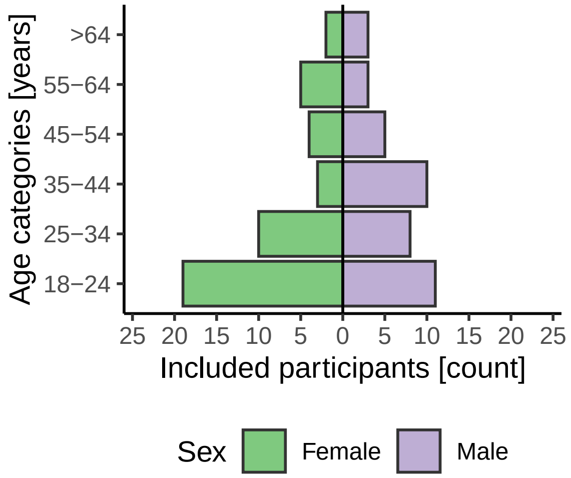
Comment: manuscript Table 1

Variable	**Included**, N = 83[1]	**Excluded after trial**, N = 23[1]	**Excluded before trial**, N = 7[1]
Age [y]	35.70 (17.16)	37.87 (20.13)	52.00 (21.54)
Age group [y]			
18-24	30 (36%)	9 (39%)	0 (0%)
25-34	18 (22%)	5 (22%)	2 (29%)
35-44	13 (16%)	0 (0%)	1 (14%)
45-54	9 (11%)	3 (13%)	0 (0%)
55-64	8 (9.6%)	5 (22%)	1 (14%)
>64	5 (6.0%)	1 (4.3%)	3 (43%)
Sex			
Female	43 (52%)	17 (74%)	3 (43%)
Male	40 (48%)	6 (26%)	4 (57%)
Uses visual aid			
No	57 (69%)	16 (70%)	3 (43%)
Yes - myopia correction	18 (22%)	5 (22%)	2 (29%)
Yes - hyperopia correction	8 (9.6%)	2 (8.7%)	2 (29%)
Wearing contact lenses during trial	16 (19%)	5 (22%)	2 (29%)
BMI	22.96 (3.47)	22.07 (3.93)	26.39 (5.79)
Iris colour			
Blue	25 (30%)	9 (39%)	0 (NA%)
Hazel/Green	17 (20%)	8 (35%)	0 (NA%)
Brown	41 (49%)	6 (26%)	0 (NA%)
Weather during trial			
Light rain	9 (11%)	0 (0%)	0 (NA%)
Very cloudy	16 (19%)	7 (30%)	0 (NA%)
Cloudy	14 (17%)	1 (4.3%)	0 (NA%)
Somewhat cloudy	11 (13%)	5 (22%)	0 (NA%)
Sunny	33 (40%)	10 (43%)	0 (NA%)
Season			
Spring	7 (8.4%)	5 (22%)	1 (14%)
Summer	40 (48%)	9 (39%)	3 (43%)
Autumn	16 (19%)	5 (22%)	0 (0%)
Winter	20 (24%)	4 (17%)	3 (43%)

[1] Mean (SD); n (%)

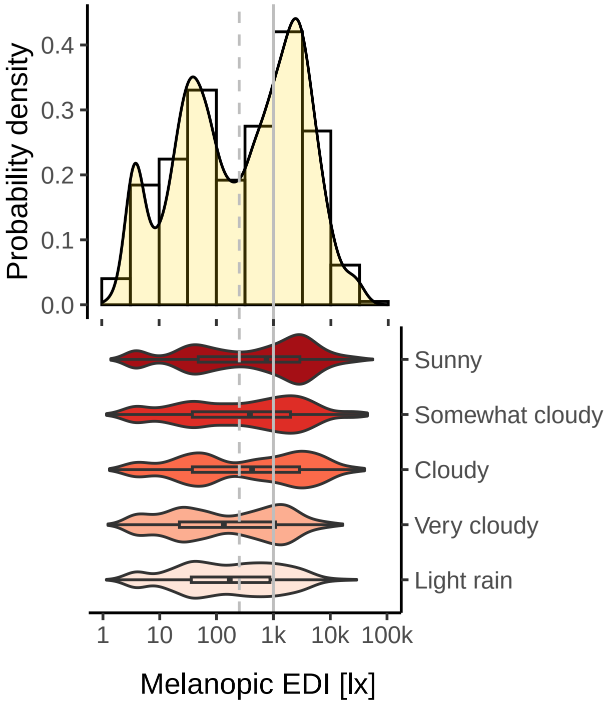
agepyr_plot.pdf

Comment: manuscript Figure 2



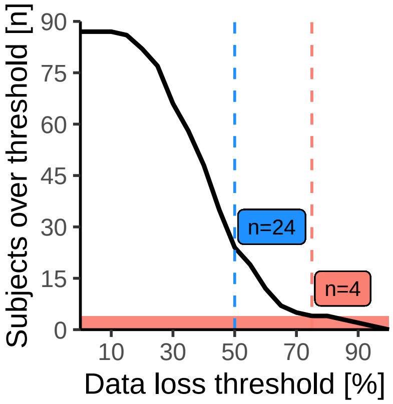
weath_panels.pdf

Comment: manuscript Figure 3



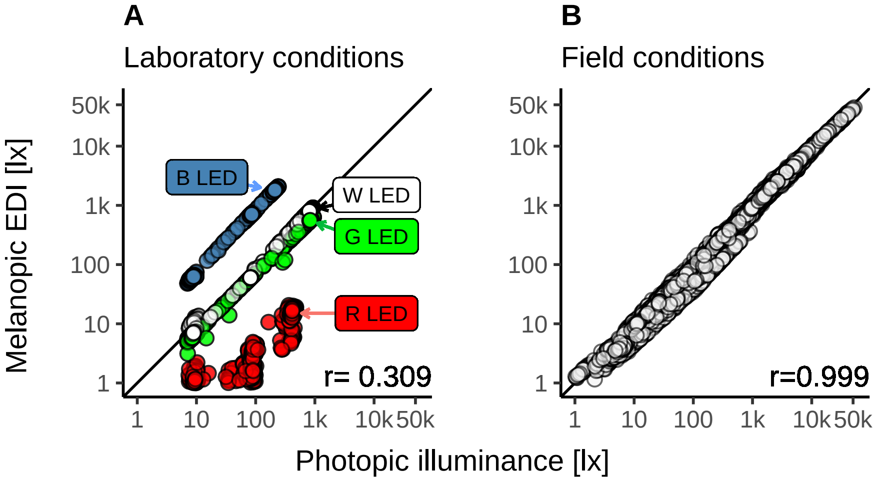
dataloss_plot.pdf

Comment: manuscript Figure 4



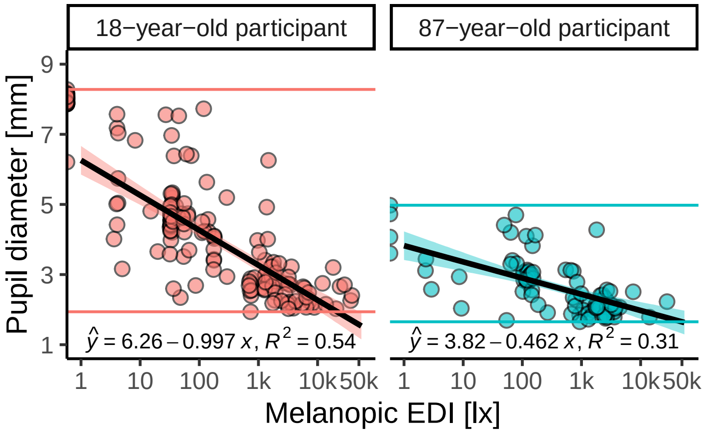
lightcomp_panels.pdf

Comment: manuscript Figure 5



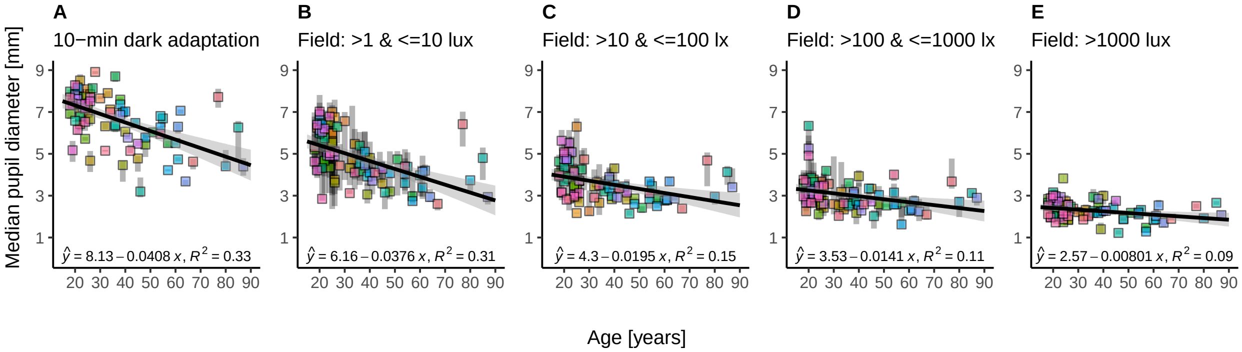
agecomp_plot.pdf

Comment: manuscript Figure 6



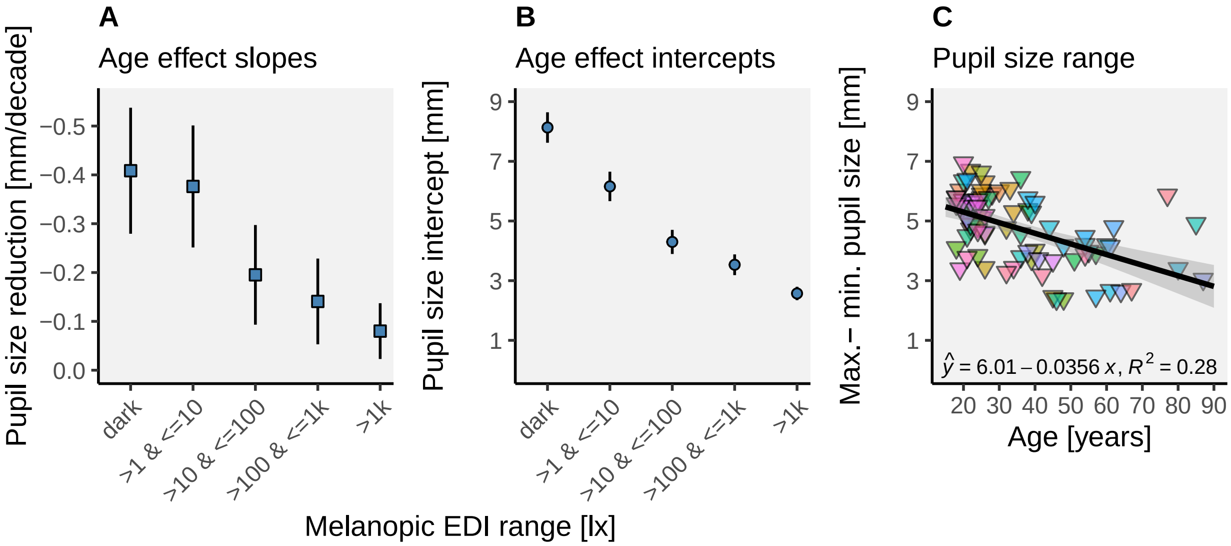
age_panels1.pdf

Comment: manuscript Figure 7



age_panels2.pdf

Comment: manuscript Figure 8



Acknowledgements

I would like to thank the authors for promptly answering any queries I had with this reproduction. CODECHECK was financially supported by the Mozilla foundation.

Citing this document

Stephen J. Eglen (2024). CODECHECK Certificate 2024-001. Zenodo. https://doi.org/10.5281/zenodo.10823246

About CODECHECK

This certificate confirms that the codechecker could independently reproduce the results of a computational analysis given the data and code from a third party. A CODECHECK does not check whether the original computation analysis is correct. However, as all materials required for the reproduction are freely available by following the links in this document, the reader can then study for themselves the code and data.

About this document

This document was created using R Markdown using the `codecheck` R package. `make codecheck.pdf` will regenerate the report file.

```r
sessionInfo()
```

```
## R version 4.3.3 (2024-02-29)
## Platform: aarch64-apple-darwin23.2.0 (64-bit)
## Running under: macOS Sonoma 14.4
##
## Matrix products: default
## BLAS:   /opt/homebrew/Cellar/openblas/0.3.26/lib/libopenblasp-r0.3.26.dylib
## LAPACK: /opt/homebrew/Cellar/r/4.3.3/lib/R/lib/libRlapack.dylib;  LAPACK version 3.11.0
##
## locale:
## [1] en_GB.UTF-8/en_GB.UTF-8/en_GB.UTF-8/C/en_GB.UTF-8/en_GB.UTF-8
##
## time zone: Europe/London
## tzcode source: internal
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets
## [6] methods   base
##
## other attached packages:
##  [1] readr_2.1.3          tibble_3.1.8
##  [3] xtable_1.8-4         yaml_2.3.6
##  [5] rprojroot_2.0.3      knitr_1.41
##  [7] codecheck_0.1.0.9005 git2r_0.33.0
##  [9] parsedate_1.3.1      R.cache_0.16.0
## [11] gh_1.3.1
##
## loaded via a namespace (and not attached):
##  [1] xfun_0.36         rdflib_0.2.7      tzdb_0.3.0
##  [4] vctrs_0.5.1       tools_4.3.3       generics_0.1.3
##  [7] curl_4.3.3        parallel_4.3.3    fansi_1.0.3
## [10] pkgconfig_2.0.3   R.oo_1.25.0       redland_1.0.17-17
## [13] assertthat_0.2.1  lifecycle_1.0.3   compiler_4.3.3
## [16] atom4R_0.3-3      stringr_1.5.0     keyring_1.3.1
## [19] htmltools_0.5.4   pillar_1.8.1      crayon_1.5.2
## [22] whisker_0.4.1     tidyr_1.2.1       ellipsis_0.3.2
## [25] R.utils_2.12.2    cachem_1.0.6      zen4R_0.9
## [28] tidyselect_1.2.0  zip_2.2.2         digest_0.6.31
## [31] stringi_1.7.12    dplyr_1.0.10      purrr_1.0.0
## [34] fastmap_1.1.0     cli_3.6.0         magrittr_2.0.3
## [37] XML_3.99-0.14     crul_1.4.0        utf8_1.2.2
## [40] osfr_0.2.9        withr_2.5.0       bit64_4.0.5
## [43] roxygen2_7.2.3    rmarkdown_2.19    httr_1.4.4
## [46] bit_4.0.5         R.methodsS3_1.8.2 hms_1.1.2
## [49] memoise_2.0.1     evaluate_0.19     rlang_1.0.6
## [52] glue_1.6.2        DBI_1.1.3         httpcode_0.3.0
## [55] xml2_1.3.3        fauxpas_0.5.2     rorcid_0.7.0
## [58] vroom_1.6.0       jsonlite_1.8.4    R6_2.5.1
## [61] fs_1.5.2
```