

SMI paper

index

snc

16065.1.2

the einleitung

inspired by the paper [...], (ref?), who found evidence for [...] we tried to replicate the pipeline of [...].

Our first draft essay proves their hypothesis [...].

background

preliminary

- embedding into class subject
- [...]

literature

hypothesis

[...]

material/methods

please cf. Schwarz (2026#todo) for the corpus building and evaluation scripts

data

our corpus consists of interview transcripts available in raw text which were tokenised and segmented into 10-unit chunks for further processing, Section .

corpus stats

| dataset | group | participants | tokens |
|---------|-------|--------------|--------|
| 1 | HC | 13 | 21650 |
| 1 | SCZ | 16 | 92250 |

computations

the computation of clip scores was done using HU resources with a python script cf. Nenchev (2026)

results

basic descriptive

first simple descriptive stats insights which are to test for stability...

Table 2: mean clip scores (table) over groups

| dataset | group | mean_clip |
|---------|-------|-----------|
| 1 | hc | 0.2213 |
| 1 | scz | 0.2398 |
| 1 | DIFF: | -0.0185 |

visuals

[...]

raffael script (commit hash!) from ggl-doc: Richter (2026)

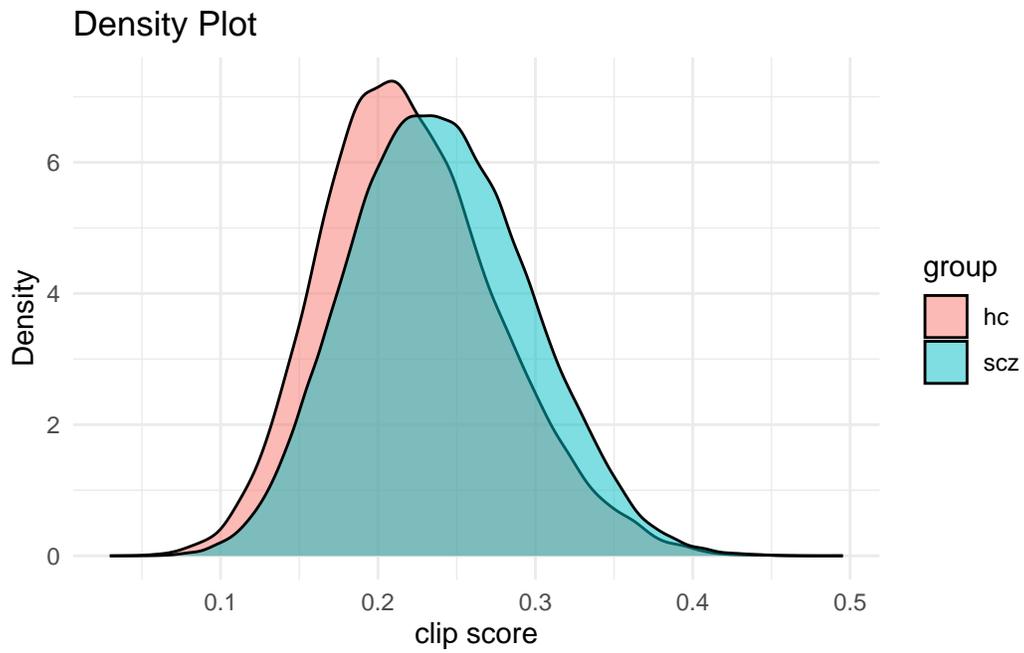


Figure 1: clip score density plot

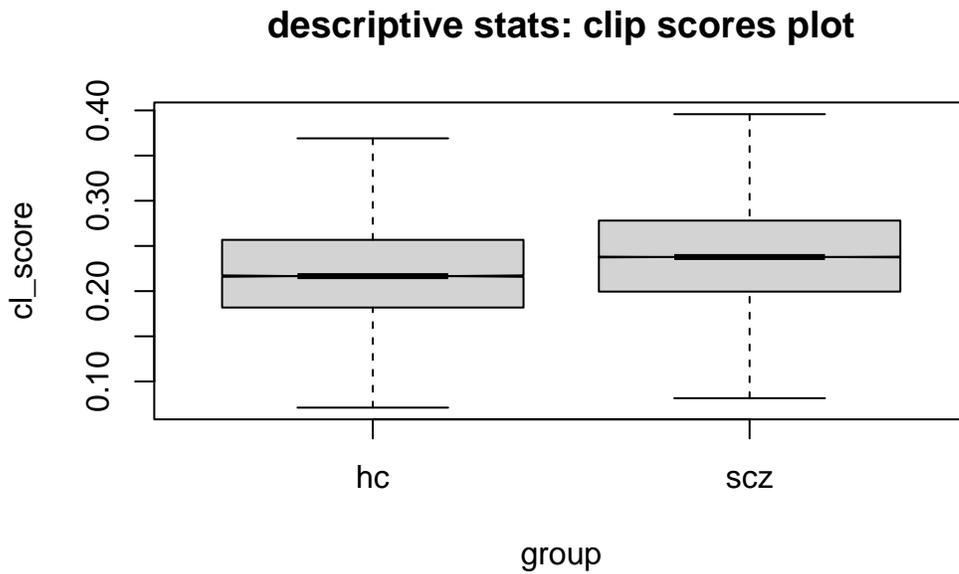


Figure 2: mean clip scores (boxplot) over groups.

linear regression

to prove descriptive results, we compute the stability [...] with a linear regression model using R's `lme4::lmer()` function, cf. Bates et al. (2015). coefficients are printed below [...]

basic (lm)

formula: `clipscore ~ group`

Call:

```
lm(formula = cl_score ~ group, data = dff4)
```

Residuals:

| Min | 1Q | Median | 3Q | Max |
|----------|----------|----------|---------|---------|
| -0.21020 | -0.04017 | -0.00256 | 0.03779 | 0.27403 |

Coefficients:

| Estimate | Std. Error | t value | Pr(> t) |
|----------|------------|---------|----------|
| | | | |

```
(Intercept) 0.2213234 0.0003823 578.94 <2e-16 ***
groupscz    0.0184706 0.0004248 43.48 <2e-16 ***
```

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.05625 on 113898 degrees of freedom

Multiple R-squared: 0.01633, Adjusted R-squared: 0.01632

F-statistic: 1891 on 1 and 113898 DF, p-value: < 2.2e-16

mixed effects model (lmer)

formula: clipscore ~ group + (1|TN)+(1|text_chunk)+ld+fstPPr_rate < positing random effects for participant and token and fixed effects for type/token ratio (lexical diversity factor) and 1st-person-pronoun rate.

Linear mixed model fit by REML. t-tests use Satterthwaite's method [lmerModLmerTest]

Formula: cl_score ~ group + (1 | TN) + (1 | text_chunk) + ld + fstPPr_rate

Data: dff4

REML criterion at convergence: -406293.2

Scaled residuals:

| Min | 1Q | Median | 3Q | Max |
|---------|---------|---------|--------|--------|
| -4.7324 | -0.5891 | -0.0624 | 0.4691 | 6.2275 |

Random effects:

| Groups | Name | Variance | Std.Dev. |
|------------|-------------|-----------|----------|
| text_chunk | (Intercept) | 1.631e-03 | 0.040381 |
| TN | (Intercept) | 7.633e-05 | 0.008737 |
| Residual | | 1.476e-03 | 0.038419 |

Number of obs: 113900, groups: text_chunk, 3653; TN, 29

Fixed effects:

| | Estimate | Std. Error | df | t value | Pr(> t) |
|-------------|-----------|------------|-----------|---------|--------------|
| (Intercept) | 0.234962 | 0.010406 | 27.942796 | 22.579 | < 2e-16 *** |
| groupscz | 0.023571 | 0.004146 | 28.049269 | 5.685 | 4.26e-06 *** |
| ld | -0.026691 | 0.034733 | 36.448483 | -0.768 | 0.447 |
| fstPPr_rate | -0.189069 | 0.122592 | 24.946504 | -1.542 | 0.136 |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```
Correlation of Fixed Effects:
      (Intr) grpscz ld
groupsz  -0.217
ld        -0.731  0.280
fstPPr_rate -0.696 -0.261  0.105
```

helper interpretation, to be tested

the coefficients interesting for us are

discussion

limitations

perspectives

ethics

acknowledgement

references

- Bates, Douglas, Martin Mächler, Ben Bolker, and Steve Walker. 2015. “Fitting Linear Mixed-Effects Models Using Lme4.” *Journal of Statistical Software* 67 (1): 1–48. <https://doi.org/10.18637/jss.v067.i01>.
- huggingface. n.d. “Google Colab.” Accessed December 15, 2025. https://colab.research.google.com/github/huggingface/notebooks/blob/main/diffusers/stable_diffusion.ipynb.
- Nenchev, Ivan. 2026. “Clip Score Computation.” https://github.com/esteeschwarz/SPUND-LX/blob/main/mental-img/clip_scores.ipynb.
- Nenchev, Ivan, Berlin Institute of Health at Charité – Universitätsmedizin Berlin, Germany, Christiane Montag, Department of Psychiatry and Psychotherapy, Charité Campus Mitte, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Germany, Sandra Anna Just, Department of Psychiatry and Psychotherapy, Charité Campus Mitte, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Germany, and Department of Clinical Medicine, UiT – The Arctic University of Norway, Tromsø, Norway. 2025. “Reverse Prompting: A

- Novel Computational Paradigm in Schizophrenia Based on Large Language Models.” In, 797–806. <https://doi.org/10.26615/978-954-452-098-4-092>.
- Patil, Suraj, Pedro Cuenca, Nathan Lambert, and Patrick von Platen. 2022. “Stable Diffusion with Diffusers.” *Hugging Face Blog*. https://huggingface.co/blog/stable_diffusion.
- Pillny, Matthias, David J. Hallford, and Kerem Böge. 2024. “The Nature of Mental Imagery and Its Relationship With Amotivational Psychopathology in People With Schizophrenia Spectrum Disorders.” *Behavior Therapy* 55 (4): 885–97. <https://doi.org/10.1016/j.beth.2024.01.009>.
- Princeton U. 2005. “Current Version.” *Wordnet*. <https://wordnet.princeton.edu/download/current-version>.
- Richter, Raffael. 2026. “Evaluation Script (Clip Evaluation, Visualisations) for p... · Esteeschwarz/SPUND-LX@01d293b.” <https://github.com/esteeschwarz/SPUND-LX/commit/01d293bfa731f80944ec1298699c15543d6dbcd7>.
- Schwarz, St. 2026. “This Paper Scripts.” <https://github.com/esteeschwarz/SPUND-LX/tree/main/mental-img>.
- Tucker, Benjamin V., Daniel Brenner, D. Kyle Danielson, Matthew C. Kelley, Filip Nenadić, and Michelle Sims. 2019. “The Massive Auditory Lexical Decision (MALD) Database.” *Behavior Research Methods* 51 (3): 1187–1204. <https://doi.org/10.3758/s13428-018-1056-1>.
- Wu, Si. 2025. “Sswiwu/Composition_and_deformance.” https://github.com/sswiwu/composition_and_deformance.
- Yates, Andrew, Bart Desmet, Emily Prud’hommeaux, Ayah Zirikly, Steven Bedrick, Sean MacAvaney, Kfir Bar, Molly Ireland, and Yaakov Ophir, eds. 2024. *Proceedings of the 9th Workshop on Computational Linguistics and Clinical Psychology (CLPsych 2024)*. St. Julians, Malta: Association for Computational Linguistics. <https://doi.org/10.18653/v1/2024.clpsych-1.0>.