Dear Dr. Marta Topor,

Please see below our replies to your helpful comments.

1. *Please bear in mind that your submitted stage 1 manuscript with abstract, introduction and method should be in the format of a research article intended for publication. We generally advise only minor and clearly highlighted textual changes in these sections between Stage 1 and Stage 2 submissions. Therefore:*
    a. *Your abstract is quite long and heavily focused on the background and rationale. You might want to shorten it, include more information about methodology and leave space to add information about results and conclusions at Stage 2.*

To shorten the abstract, we removed multiple sentences of background information and added a few sentences about key methodological aspects. The net reduction should leave more space for information about results and conclusions at Stage 2.

    b. *One of the reviewers suggests moving a part of your introduction into a future discussion section. Perhaps it's a good idea to consider this suggestion a bit more broadly for your introduction. The introduction is very rich in information, and it is well structured, but maybe some of the detail could be saved for the discussion. I leave this decision up to you, but just want to note that just the theoretical background part is currently more than 5 000 words. I expect that your results and discussion sections will also be very extensive since you have many hypotheses and planned analyses. At this point, it's good to consider how this will all look together in the end and make edits in accordance with what you would like the final manuscript to look like.*

We have also removed the entirety of what was previously section 1.3 in order to save it for possible inclusion in the discussion section.

    c. *I also want to highlight one of the reviewers' comments, that the proof-of-concept section of the manuscript would be appropriate as a supplementary file. I agree with this, and I wanted to suggest that you could upload it to your OSF repository as a separate file. This will aid the clarity of the manuscript once you report the study results.*

We have also separated out the proof-of-concept section into its own supplementary file.

2. *Tables with research questions and hypotheses.*
    a. *Since the research questions are not stated in the text, it would help to have parentheses with the aim number next to each research question so it's easier to relate these back to the aims. E.g., Do sPCIst and sLZc discriminate between brain responses to coarsegrained differences in visual stimuli? (Aim 1).*

We have added aim numbers to each research question in tables 1-3.

3. *Methods:*
    a. *In the sampling section and inclusion/exclusion criteria, please state whether you have any age limits for participants.*
    b. *Add space in the manuscript for a "participants" section, which will be added after you have collected data.*
    c. *Please also add a section with a clear explanation of what the procedure will look like, including ethical considerations and that two experimental sessions will be scheduled with each participant. This is currently unclear.*
    d. *What demographic information will be recorded for each participant?*

In the methods section, we have added sub-sections for "participants" and "procedure", including information about age limits, ethical considerations, demographic information, and the fact that two experimental sessions will be scheduled.

4. *The sample size calculation*
    a. *You write "we conducted power analyses using custom scripts". Please provide details on software & version. Are you planning to share these scripts and the data? If not, please justify.*

We have added version information for all softwares/programming languages used, and we will upload these scripts to our repository.

    b. *You provided a sample size calculation based on a previous study with three other experimental tasks and stimuli that are relevant to the aims of the proposed study. Your final sample size is an average taken from these calculations supplemented with a small note in footnote 24. According to your calculations, the study would be underpowered to detect 3 of the simulated effects. Instead of a footnote, it would be good to have a clear statement in the manuscript describing the outcome of the sample size calculation and a justification of why the sample size of 43 is adequate for your proposed study given that when looking at Table 5, it would be underpowered to detect 3 of the simulated effects and given the complexity of your study design with multiple analysis models.*

We have also revised our sample size calculation more conservatively (from 43 to 50) and promoted our justification from a footnote to the main text in section 2.1. Essentially, with the effect for LZc still potentially slightly underpowered, we consider the sample size appropriate given its magnitude and real-world constraints, because if this study yields significant results for only PCI, that would still be an economically significant finding in terms of a difference in sensitivity between PCI and LZc. In addition, we are also now proposing to treat this sample size as an upper bound, since, per one of the reviewers' comments, if we are to compute Bayes factors as a complement to hypothesis testing, we can also compute them after collecting data

from each participant to determine if sufficient evidence for either the alternative hypothesis or null hypothesis is obtained prior to 50 subjects (Schönbrodt, F. D., & Wagenmakers, 2018).

5. *Stimuli:*
    a. *You write that you are adapting stimuli classes from Mensen et al., 2017. Are you using the exact same stimuli as Mensen et al. (2017) or are you preparing new stimuli? Please state how the stimuli can be accessed.*
    b. *You state that custom scripts will be used to generate noise stimuli. Please state specific software and algorithms.*

Since we have ultimately been unable to get a response from the lead author of Mensen et al. (2017) (even with help from the other authors), we have decided to generate our own visual stimuli based on similar classes/categories used by Mensen et al. (2017). We have also changed from phase-scrambling to image-blurring in order to make this class a closer analog to the noise-vocoded auditory stimuli. We have added information about how we are generating all stimuli in sections 2.2.1 and 2.2.3, and all stimuli will be made accessible on our repository.

    c. *What software will be used for stimuli presentation?*
    d. *Add information about the display of the visual stimuli – monitor size, refresh rate, size of the stimuli. Add information about the type and model of speakers used for the auditory stimuli.*

We have also added information about the hardware/software for stimulus presentation for both the visual and auditory stimuli in sections 2.2.2 and 2.2.4.

    e. *Participants will make responses to rate the stimuli – what is the mode of responses? Using a keyboard, a mouse? Please specify.*
    f. *How are correct and incorrect responses operationalised?*

In sections 2.2.2 and 2.2.4, we have also clarified the mode of responses participants will use to rate the stimuli (mouse input), as well as how we are operationalizing correct and incorrect responses (whether or not participants choose the same category/class that was presented objectively). We have also made explicit a brief training period.

6. *EEG pre-processing:*
    a. *What method of baseline correction will be used?*

We have added information about the EEG baseline correction method in section 2.4.

7. *Analysis plans*
    a. *Your models correspond to research questions and hypotheses in Tables 1 and 2. What about the models for Table 3?*
    b. *The use of the term 'Meaningfulness' in the statistical models is confusing because it's the same as one of your subjective variables. You have a brief*

explanation of 'meaningfulness' in footnote 29, but this needs to be clearly explained in text, so that the reader can understand it's not about the subjective rating. You had this described more clearly in the pilot analysis section – i.e. "Meaningfulness (with scrambled images coded as -0.5 and natural images coded as 0.5)" and "ObjectCategory (with cars coded as -0.5 and faces coded as 0.5)". Please do the same for the main analyses and explain clearly for both the visual and the auditory task conditions.

c. *In addition to the above, you have three levels of noise here, so I assume that the Meaningfulness coding -0.5 and 0.5 will not apply.*

In section 2.8, we have added the model specifications for our exploratory aims, as well as revised the specifications for our primary aims (including the coding schemes). We have also revised the naming scheme of the variables and clarified their meanings in the main text. We have also added models and hypotheses for the conditions in which the stimuli are identical but in which differences in phenomenology may manifest (image-blurring and noise-vocoding).

8. *Minor corrections*
    a. *P.23 and p.26 "A summary of all five dimensions, their operationalizations, examples, and rationales is given in Table 5". This should be Table 6*
    b. *Every time you mention the use of software and packages – Matlab, EEGLAB, Python, R etc. add the version of the software used or leave a blank space to complete at Stage 2*
9. *In your next version, please clearly mark all changes to the submitted manuscript. You may also choose to additionally upload a clean version of the manuscript to the OSF.*

We have made the minor corrections suggested, indicating all additions in green text and all deletions in ~~strikethrough~~ red text (with a clean version also uploaded to our repository).

Thank you again for your helpful comments, and we look forward to any further feedback you may have.

Dear Dr. Michal Bola,

Please see below our replies to your helpful comments.

1. *Introduction: The first part of the paper is not a classic introduction but rather an extensive review of previous literature. The authors have nicely identified gaps and inconsistencies in previous research. However, section 1.3.3 is rather speculative, so maybe move it to discussion? Especially that it ends "This study will not explicitly investigate this possibility, but it would be an interesting topic for future investigation".*

Per a similar comment from the Recommender, we have removed the entirety of what was previously section 1.3 of the manuscript in order to save it for possible inclusion in the discussion section.

2. *Hypotheses: when presenting and discussion hypotheses the authors do not indicate the direction of the effect, for instance "Our five hypotheses for aim 3 are that there will be differences in sPCIst and sLZc between: 1) all images and all audio; 2) natural images and natural audio; 3) visual noise and auditory noise; 4) animal images and animal audio; and 5) household-objects images and household-objects audio". Can you please clarify why you do not present directional hypotheses?*

We are not presenting directional hypotheses for any of our three primary aims precisely because in previous work, directions of these effects have been inconsistent (so we do not want to limit our models from detecting effects in either direction). We have added this point to section 1.5.6.

3. *P. 16 "Our second exploratory aim is to assess if sPCIst and sLZc reflect brain activity involved in reporting vs. not reporting." - what does "reporting" mean in this context? How will it be operationalized?*

For the reporting/no-reporting aim, we will aggregate trials across all stimulus modalities, classes, and categories into one reporting vs. no-reporting condition. The reporting condition is being operationalized to include only the individual trials immediately following responses to either the subjective or behavioral task. Thus, if 'n' designates a trial in which a participant is tasked to respond, the reporting condition will include all 'n+1' trials. We are not treating the reporting trials themselves as the reporting condition, because on those trials, participants do not yet know that they will need to report by the time sufficient EEG data is collected post-stimulus (350-400 ms) to compute PCI and LZc. (This is by design in order to exclude any motor activity involved with reporting from the EEG window of interest). As such, we hypothesize that any residual reporting-related effect will be strongest on the trials immediately following the reporting trials, perhaps before it decays due to reports being tasked on only a random 33% subset of trials. We have added these points to section 1.5.5.

4. *Stimuli: Physical (low-level) differences in the visual stimuli used - using images of animals and household objects will most likely result in differences in physical features (e.g. spatial frequency) between these categories (and this will probably be reflected also in phase-scrambled versions). Will such differences be controlled, or do you assume they are of no relevance?*

As was demonstrated by Boly et al. (2015), we assume that any differences in PCI/LZc will generally be beyond any such low-level differences in the stimuli. And while we agree that it would be ideal to control for this in advance, we have been unable to identify a technique for formally doing so while maintaining the important high-level differences across all of our stimuli. Nevertheless, our image-blurring and noise-vocoding manipulations do provide a partial control for this, because any differences in PCI/LZc in those conditions will occur while the stimuli (including low-level differences) remain identical. (We have made this clarification in several sections of the manuscript). However, we agree that this is important, so if we do find differences in PCI/LZc in the other stimuli conditions, we are open to conducting post-hoc analyses (since the current study scope is already quite substantial) to show that these differences are indeed beyond any differences in the stimuli themselves.

5. *Analysis: "Finally, a low-pass filter will be applied using a non-causal Butterworth impulse response function with a half-amplitude cutoff of 45 Hz and 12 dB/oct roll-off." - ideally, a low-pass filter should be employed before downsampling to avoid the aliasing effect.*

With respect to software-based low-pass filters, our understanding is that their order doesn't matter since they are linear (or approximately linear) operations (Luck, 2014). However, we will apply the low-pass filter prior to downsampling and have revised section 2.4 accordingly. We also note here that our analog-to-digital conversion hardware includes a first-order anti-aliasing filter.

6. *"Before computing sPCIst and sLZc, we will exclude the trials that contain EEG artifacts." - this is described in the previous section so maybe no need to state again (it suggests that some subsequent data cleaning will be performed before calculating these measures).*

We mention this twice because the first mention describes the artifact identification and flagging, which is done in the Matlab part of the pipeline, whereas the second mention describes the actual exclusion that is done in the Python part of the pipeline, where additional cleaning/manipulation is indeed performed before final calculation of the measures.

7. *I think that more details regarding calculations of sLZc need to be provided. Will these measures be calculated on single-trial data? Which time-window will be used (0-400, similarly as for sPCIst?)?*
8. *"To binarize the continuous EEG signal, we will use the mean of the absolute value (instantaneous amplitude) of the analytic (Hilbert-transformed) signal" - mean over a given trial/channel? How will this mean be calculated?*

To address the above points, we have updated the following paragraph in section 2.7: “To binarize the continuous EEG signal, we will use the mean of the absolute value (instantaneous amplitude) of the analytic (Hilbert-transformed) signal, using an open-source Python (version 3.10.12) library (https://docs.scipy.org/doc/scipy/reference/generated/scipy.signal.hilbert.html). To most closely match the way that PCI analyzes the continuous EEG signal based on differences between response and baseline periods, for LZc – we will use the instantaneous amplitude of the baseline period of each channel/trial as the basis for binarizing the response period. To be consistent with how we are computing PCI, we will also compute LZc using the same baseline and response windows for each trial.”

9. *“After computing PCIst, we will exclude trials where PCIst=0.” - what might be the cause of the measure = 0?*

Based on our pilot data, we expect a small number of trials where PCIst=0, which we will exclude (and report). While the PCIst algorithm provides a signal-to-noise-ratio parameter, which when increased, yields more PCIst=0 values, when we performed a parameter sweep to try to minimize the number of PCIst=0 values, we were never able to completely eliminate them, so we left the parameter at its default value. We assume that PCIst=0 values indicate trials in which the PCIst algorithm is simply not sensitive enough to pick out the signal from the noise (as opposed to the implication that participants are losing consciousness), which is likely due to the subtle nature of sensory perturbations compared to TMS, the latter of which the PCIst algorithm was developed for.

10. *A more general comment regarding the analysis is that we do not know how PCI/LZ measures depend on preprocessing steps. One such step is re-referencing - here the authors decide to re-reference to the average signal. Is there any rationale behind using an average rather than mastoids? I would also suggest doing a control analysis with the signal referenced to mastoids.*

In our experience, mastoids-reference is not used as often in auditory studies, because it is more likely to subtract out potentially relevant auditory-processing activity. Because one of our sessions is auditory, to be consistent, we propose to use average-reference for both auditory and visual paradigms. (We have added these points to section 2.4). However, we agree that this might be interesting to explore, so we can add a mastoids-reference analysis post hoc (since the current study scope is already quite substantial).

11. *Second, at the moment the spatial dimension is completely disregarded in the analysis. From my experience electrodes closer to the midline (3, z, and 4 line) typically exhibit lower diversity, while electrodes closer to the jaw and neck muscles (7, 8 line) exhibit higher diversity, just because they record more artefacts (which artificially increase signal diversity). Thus, here the authors might consider two things - first, to inspect topographies of diversity measures (create plots for each condition, but also differential plots with one conduction subtracted from the other) and, second, to conduct the*

analysis on a subset of electrodes closer to the midline (and excluding the typically most noisy electrodes). Both might be investigated and tested in the pilot data.

We agree that this will also be interesting to explore, so we are currently conducting the suggested analyses in our pilot data, and depending on the findings, we will add these analyses to our study post hoc (since the scope of the current study is already quite substantial).

12. *Proof of concept: The authors present results of a "proof of concept" analysis, which I think should be evaluated very positively - in the final version these can probably be presented in the supplementary material rather than the main manuscript.*

We have removed the proof-of-concept analyses from the main manuscript and will upload it as a separate supplemental document.

13. *Minor comments: P. 13 "After each trial, participants will provide subjective ratings for their experience of the stimulus according to the following five dimensions…" - but this will be done in ⅓ of trials, right?*

Yes! We have clarified this accordingly in several sections of the manuscript.

14. *P. 14 - ". This aim allows us to provide evidence not provided by previous studies (Mensen et al., 2017)." - please specify what kind of evidence.*

By this we are referring to the *within-category* evidence, which has been clarified accordingly in section 1.5.1.

Thank you again for your helpful comments, and we look forward to any further feedback you may have.

Dear Dr. Stefan Wiens,

Please see below our replies to your helpful comments.

1. *I wonder whether hypothesis testing (eg Table 1) could be complemented with Bayes factors and other indices such as probability of direction (see references)...*

We have updated Table 1, our sampling plan, and our analysis section to include Bayes factors and probability of direction analyses.

2. *P. 28: "Electrode offsets (relative to the Common Mode Sense electrode) will be set to within ±20 μV for all channels." It sounds as if it can be forced to this range. I use this system, and we always hope that it will be within the range, but if it is not despite our efforts, there is not much to do.*

We have clarified in section 2.3 of the manuscript that these offsets will be set *as closely as possible* to this range.

3. *P. 28: "Components associated with eyeblinks and horizontal eye movements will be removed by visual inspection." Eyeblinks are easy, but I find horizontal eye movements are tricky. What criteria do you use?*

For horizontal eye movements (i.e., saccades), horizontal electrooculogram recordings typically show a sudden step from one voltage level to another (until the eyes move again), which leads to a boxcar-shaped voltage deflection (Luck, 2014), which can be removed by visual inspection analogous to how blinks are removed.

4. *P. 28: "Segments of data that contain voltage-threshold artifacts (+-150 microvolts) that survive ICA removal will be flagged for subsequent removal". The phrase "survive ICA removal" is confusing.*

We have removed this phrase accordingly from section 2.4.

Thank you again for your helpful comments, and we look forward to any further feedback you may have.

Dear Anonymous Reviewer,

Please see below our replies to your helpful comments.

1. *Pg 7. While it is true that PCI is capturing (possibly mostly) integration, while LZC captures differentiation, I suspect another reason why PCI has greater discriminatory power.*

As a brief clarification, we believe that PCI is actually capturing more of a balance of integration *and* differentiation, whereas LZc is capturing mostly only differentiation.

2. *The fact that PCI is calculated on an evoked response suggests a higher signal-to-noise ratio than in the data from which LZC is recorded, which is just spontaneous data. This is particularly the case in the classic paradigm involving TMS – signal amplitudes become much higher than at baseline in the data segments from which PCI is computed.*

We have added this point to section 1.1.2 of the manuscript. Furthermore, by employing sensory stimuli for PCI and computing LZc in the same evoked manner, we may be able to gain insight as to whether any difference in discriminatory power between PCI and LZc is due to the higher signal-to-noise ratio of TMS-perturbation. (This point has been added as a footnote in section 1.3).

3. *It's also probably worth mentioning that PCI (with TMS) is being computed on some large amplitude electrophysiological signal that is not actually part of the substrate of consciousness – participants' conscious contents are not typically altered by administration of TMS pulses.*

This is an interesting/important point, and our plan is to address this in the discussion section of our stage 2 manuscript. To our knowledge, it's not typically reported in the PCI literature whether or not subjects actually experience any alterations to their conscious contents upon TMS administration. And while TMS applied to certain cortical locations may indeed not yield any alterations, there are some cortical locations that do yield alterations (e.g., TMS applied to occipital cortex yields phosphenes). Nevertheless, if we find that PCI can discriminate between different sensory experiences, this would suggest that TMS may not be the appropriate perturbational technique for investigating fine-grained differences in conscious contents (which is one of the points that we removed from the introduction per the other reviewers and are planning to re-introduce in the discussion section).

Thank you again for your helpful comments, and we look forward to any further feedback you may have.

References

Boly, M., Sasai, S., Gosseries, O., Oizumi, M., Casali, A., Massimini, M., & Tononi, G. (2015). Stimulus set meaningfulness and neurophysiological differentiation: a functional magnetic resonance imaging study. *PloS one*, 10(5), e0125337.

Luck, S. J. (2014). *An introduction to the event-related potential technique*. MIT press.

Schönbrodt, F. D., & Wagenmakers, E. J. (2018). Bayes factor design analysis: Planning for compelling evidence. *Psychonomic bulletin & review*, 25(1), 128-142.

Personal notes/to-do's

1. ~~Measure of integration alone (eg SCE)?~~
    a. Ad hoc, future
2. ~~REVIEWER 3: "It's also probably worth mentioning that PCI (with TMS) is being computed on some large amplitude electrophysiological signal that is not actually part of the substrate of consciousness – participants' conscious contents are not typically altered by administration of TMS pulses."~~
    a. ~~Interesting/important point, plan to discuss in discussion, roughly highlights importance of spci vs tms, also TMS does sometimes alter, but subtly~~
3. ~~Are we making these predictions at the group level and/or individual level?~~
    a. ~~Yes, by implication? But harder to find effects going from person to person~~
    b. ~~Confirm with Kristina how to add to report p. 16~~
    c. Individual post hoc
4. ~~Is aim 3 independent of aim 1~~
    a. ~~Yes~~
5. ~~Would we predict differences between blurred images and noise-vocoded audio?~~
    a. ~~No prediction, (can't process - Jeff)~~
6. ~~For the reporting/no-reporting (and correct/incorrect) aims, should we still look within modalities, classes, and categories?~~
    a. ~~Keep manipulation, pull aim 2 unless figure out now, otherwise leave ad hoc, ~n+1, confirm with Kristina p. 16~~
    b. ~~Keep it~~
    c. Post, calc pci as a function of time delay
    d. ~~Look at all for correct/incorrect~~
7. ~~Is one measure more sensitive? Would this lead to a specific hypothesis/prediction, or would it be more implicit/exploratory?~~
    a. Talk about in discussion if applicable
8. ~~Is it easier to find effects in one *modality* vs. the other?~~
    a. Talk about in discussion if applicable, already have via existing granularity hypotheses
9. ~~RECOMMENDER: "In the sampling section and inclusion/exclusion criteria, please state whether you have any age limits for participants."~~
    a. ~~18-39 (no minors, consent, for auditory, certain aspects can decline even with normal hearing in middle age)~~
    b. ~~Please also add a section with a clear explanation of what the procedure will look like, including ethical considerations and that two experimental sessions will be scheduled with each participant. This is currently unclear.~~
        i. ~~All research will be performed according to ethical standards as outlined in the Declaration of Helsinki.~~
    c. ~~What demographic information will be recorded for each participant?~~
        i. ~~Age, gender, language background~~
10. ~~RECOMMENDER: Instead of a footnote, it would be good to have a clear statement in the manuscript describing the outcome of the sample size calculation and a justification~~

~~of why the sample size of 43 is adequate for your proposed study given that when looking at Table 5, it would be underpowered to detect 3 of the simulated effects and given the complexity of your study design with multiple analysis models.~~

   a. ~~Although this sample size is potentially underpowered for sLZc, we consider it appropriate given its magnitude (50 subjects) and real-world constraints, because if this study yields significant results for only PCI, that would still be an economically significant finding in terms of a difference in sensitivity between PCI and LZc.~~
   b. ~~Trim down.~~
   c. Re-do power analyses with updated trial number

11. RECOMMENDER: Please state how the stimuli can be accessed. (Put on repository)
   a. ~~You state that custom scripts will be used to~~ generate noise ~~stimuli. Please state specific~~ ~~software and algorithms~~.
      i. Year, gender, race, **black and white**, copyright
      ii. Gaussian filter, equate difficulty, % of words
      iii. imgaussfilt(), sigma
      iv. Positive odd integer
      v. img_blurred = imgaussfilt(img,floor(blur_amt(b)/2),'FilterSize',blur_amt(b),'Padding','circular', 'FilterDomain','spatial');
      vi. imwrite()
      vii. Completely scramble 256x256 matrix
      viii. using a random number generator over the three color layers of the natural image so that the noise is based on a range of colors rather than classic gray-scale noise
      ix. J = randperm(length(I(:))) // single column vector, convert back to 2-d
      x. reshape(j, 256, 256) (size(I, 1)
   b. ~~What software will be used for stimuli~~ ~~presentation~~~~?~~
      i. ~~Presentation (Neurobehavioral Systems, Inc.)~~
   c. ~~Add information about the display of the visual stimuli –~~ ~~monitor size, refresh rate, size of the stimuli.~~
      i. Measure monitor, ~~59 Hz~~, arbitrary/compute degree, ~~take andrew's key~~
   d. ~~Add information about the~~ ~~type and model of speakers~~ ~~used for the auditory stimuli.~~
      i. ~~Yamaha HS8 (studio monitor speakers)~~

12. ~~We assume that low-level differences between categories (e.g., between images of famous people and household objects) will either not be systematically different for one category over the other, or will be controlled by our expectation that for some participants, there will be images of famous people that rate higher than images of household objects on the five subjective dimensions, and vice versa. In other words, even if, for example, low-level differences are systematically more complex for famous-people images, we expect that some participants will rate some images of household objects higher than some images of famous people (e.g., for household objects that mean a lot to them, compared to famous people they do not recognize).~~

~~Thus, we do not expect differences in sPCIst and sLZc to be explained solely by stimulus features/complexity.~~

- ~~a. First, make avg frequencies of objects same, filter, Kristina~~
- ~~b. Distort too much…not sure how to control…~~
- c. Quantify spatial frequency, t-test between all images in each category…
- d. Then compute LZc on stimuli (RSA) post hoc as needed

~~13. How many trials after the reporting trials should be considered for the reporting condition?~~

- ~~a. Kristina~~
- ~~b. n+1~~

~~14. How will we know if people understood the noise vocoded stimuli on non-rated trials?~~

- ~~a. Have them rate every trial, but not use these in the reporting/no-reporting analysis, re-check with Kristina~~
- ~~b. Ask at end type in word~~
- ~~c. Keep thinking through it…~~
- ~~d. Fix auditory image, re-word better~~
- ~~e. Update duration estimate~~

~~15. 2x3?~~

- ~~a. Kristina, Tyler…~~

~~16. How to create the blurred images? (scripts, photoshop)?~~

- ~~a. See above~~

~~17. High-pass cutoff? 0.5, 1 Hz? In my pilot I used 0.1…~~

- ~~a. Distortion, Luck always recommends 0.1, but signals of interest, adding noise below 1???~~
- ~~b. PCI~~
  - ~~i. 0.1-45 (Casali, 2013; Comolatti, 2019)~~
  - ~~ii. 0.5-40 (Casarotto, 2023)~~
  - ~~iii. 1-45 (Farnes, 2020)~~
  - ~~iv. 1-45 / 0.5-40 (Ort, 2023)~~
- ~~c. Differentiation/LZc visual/auditory~~
  - ~~i. 0.5-40 (Mensen, 2017/2018)~~
  - ~~ii. 1-45/55 (Bola, 2018; Orlowski, 2023)~~
- ~~d. LZc psych~~
  - ~~i. 1-30 (Schartner, 2017)~~
  - ~~ii. 1-45 (Timmerman, 2019)~~
  - ~~iii. 0.5-20 (Cavanna, 2022)~~

~~18. REVIEWER 2: "Eyeblinks are easy, but I find horizontal eye movements are tricky. What criteria do you use?"~~

- a. If EOG, obvious; also qualitative, visual inspection, based on HEOG, really obvious rectangular shape ~, component activations over time, topography, we only reject if sure if a saccade, may not reject for every subject (may not see them)

~~19. REVIEWER 1: "I would also suggest doing a control analysis with the signal referenced to mastoids."~~

    a. TY we have added / will incorporate… (subtract out for auditory), maybe reject, S to decide

20. ~~REVIEWER 1: "at the moment the spatial dimension is completely disregarded in the analysis. From my experience electrodes closer to the midline (3, z, and 4 line) typically exhibit lower diversity, while electrodes closer to the jaw and neck muscles (7, 8 line) exhibit higher diversity, just because they record more artefacts (which artificially increase signal diversity). Thus, here the authors might consider two things - first, to inspect topographies of diversity measures (create plots for each condition, but also differential plots with one conduction subtracted from the other) and, second, to conduct the analysis on a subset of electrodes closer to the midline (and excluding the typically most noisy electrodes). Both might be investigated and tested in the pilot data."~~
    a. Compute lzc at each channel, plot for natural, plot for blurred, take difference, then plot, more complexity around sides, if there is, confound, if so, focus on midline, topoplot
21. ~~RECOMMENDER: What method of baseline correction will be used?~~
    a. ~~Confirm with PCI and erpcore, mean-centering for ICA, look at other papers~~
22. ~~REVIEWER 1: "ideally, a low-pass filter should be employed before downsampling to avoid the aliasing effect"~~
    a. Shouldn't make a difference, but can do
23. ~~REVIEWER 1: "this is described in the previous section so maybe no need to state again (it suggests that some subsequent data cleaning will be performed before calculating these measures)."~~
    a. ~~Reply in response paper~~
24. ~~Add 100ms for auditory processing? P30~~
    a. ~~A P1 50-60, V P1 100~~
25. ~~Segments for artifacts? P28~~
    a. ~~Make same -400 400~~
26. ~~REVIEWER 2: "The phrase "survive ICA removal" is confusing."~~
    a. ~~removed~~
27. ~~Artifact threshold? P29~~
    a. ~~-150~~
    b. ~~keep, no comment from reviewers~~
28. ~~3 versions of LZc? P30~~
    a. ~~ok~~
29. ~~Plus 3 versions of binarizing?~~
    a. ~~Gpt, pre only~~
30. ~~Standardization vs. normalization? P30~~
    a. ~~Stick with standardization, scale is more interpretable, ambiguous between multiple things~~
    b. Why from Rachel?
31. ~~REVIEWER 1: "After computing PCIst, we will exclude trials where PCIst=0." - what might be the cause of the measure = 0?~~
    a. ~~Based on our pilot data, we expect a small number of trials where PCIst=0, which we will exclude (and report). Since sensory stimuli do not provide strong~~

perturbations relative to TMS, we assume that PCIst=0 values indicate trials in which the PCIst algorithm is simply not sensitive enough to pick out the signal from the noise (as opposed to the implication that participants are losing consciousness). If p is too high, get more 0s, i did a parameter search, never get rid of it altogether, suggests. And keep in mind TMS.

32. RECOMMENDER: "Your models correspond to research questions and hypotheses in Tables 1 and 2. What about the models for Table 3?

a. Done

b. In addition to the above, you have three levels of noise here, so I assume that the Meaningfulness coding -0.5 and 0.5 will not apply."

i. Tyler

33. REVIEWER 2: "1) I wonder whether hypothesis testing (eg Table 1) could be complemented with Bayes factors and other indices such as probability of direction (see references). Theoretically, Bayes factors are the Bayesian equivalent to null hypothesis significance testing. At the minimum, Bayes factors are worthwhile as a complement to other measures. Practically, they can be computed from the output of linear mixed brms models (bayestestR package)."

a. Tyler…

b. Think it through and give a reason why not, but maybe worse (!)

34. Item_id?

a. Why not

35. Conor analysis

a. pop_biosig(in_fn,'importannot','off');

b. Tech don't need to 'ref'

c. Triggers won't read in via GUI?

36. Stimuli

a. Famous people

i. https://www.listchallenges.com/200-most-famous-people-of-all-time/list/5

ii. Exclude

1. Non-photos
2. Single-names
3. 3-word names

iii. Features

1. Gender
2. Caucasian
3. EyeContact
4. Smiling
5. SmilingTeeth
6. Body
7. BodySkin
8. Hat
9. Glasses
10. OtherObjects

b. Household objects

c.