

General Guidelines for Critical Responses

- Focus the discussion on your paper's specific results: avoid long summaries of background discussion that's only indirectly related to the paper – e.g. what the main previously held views in the field were. This background is important to understanding the paper, but with less than two pages of space, it's better to jump right to the point.
- When summarizing the paper's experimental design and results, it's helpful to mention the *key controls in the paper*:
 - What were they, and what were they intended to control for?
 - Do the controls test for what they're intended to test?
- When proposing future experiments, explain clearly what questions they are meant to test, and why these are not addressed by the current paper's experiments. It would be nice to also mention controls you might run for your future experiments.
- Several students suggested the use of eye tracking and brain imaging in future experiments. If you propose such “high-tech” expensive experiments, explain what question or insight you expect to get from them. For example, in the case of brain imaging, simply looking for “the neural correlates of X” is not motivation enough on its own, since this is often tangential to the main paper's questions or research aims. Using an eye tracker to simply be “more quantitative” is also not enough of a motivation, unless you explain how the quantitative data will address a new question (that's relevant to the paper's study), or rule out certain hypotheses.
- Also, when proposing these high tech experiments, consider the difficulties of getting the method to work in your subjects' age range, interpreting the data that these methods generate, the potential confounds they introduce, and whether all of these are outweighed by the insights the new method might yield. For instance, it's not clear that subjects in the age ranges tested in many of the papers can even be reliably imaged or eye tracked. In the case of imaging, some proposals argued for the use of imaging between adult and very young subjects. This comparison could introduce many confounds due to biological changes that result from aging... are these confounds easier to deal with than the behavioral measures the paper used?

Some general guidelines and things to avoid:

- Avoid discussion of the statistics of the paper, unless it's *absolutely* essential (in 99.9% of the cases it won't be, especially for this batch of papers). If the authors claim their results are statistically significant, take them at their word. For example, suggesting that the “sample size might be too small” to warrant significance would not be a valid critique. On the flip side, the fact that a paper reports statistically significant results does not really count as a positive feature of the paper. If the results weren't statistically significant, they probably wouldn't make it to the journal in which the paper was published. So don't cite this as a positive aspect of the paper.
- Avoid critiques that are very generic, i.e. critiques that could be applied to virtually any study in the field. For example, if looking times are taken to be a measure of infants' surprise in the field, it's not constructive to critique any particular paper for interpreting looking times in this way, unless there's something *specific to that*

paper's experimental design/interpretation that makes looking times inappropriate or misleading. To give another example: if a study shows a phenomena in a very early age (e.g. 1 month olds) and concludes that this is likely to be governed by an innate mechanism, it's logically correct, but not very illuminating, to point out that it could still be learned from experience in between age zero and whatever age was tested. Experimenters must test subjects at some age, and the earlier you go the harder it is to execute experiments that address interesting questions. In short, a good rule of thumb is: if your critique could be applied to just about any paper in the field, without any references to the details of that paper and the questions it's addressing, you're probably not being specific enough.

- The same rule holds true for praise of the paper. The fact that the authors did not inform parents of the purposes of the study so as to prevent them from biasing their children's responses is not praise worthy, since it's just standard good practice.
- Avoid suggesting experimental changes/future experiments that are very generic and could theoretically improve any study. For example, suggesting that a wider range of ages should be tested, or that more subjects could be tested to make the results more robust, is not typically helpful to the authors. Is there a *specific* reason why the current age range tested is not appropriate for answering the question that experimenters set out to answer? What would be gained by expanding the age ranges, and to what age ranges in particular? Likewise, why add more subjects to the study? Is there any reason to believe that the current subject pool does not constitute an essentially random sample for the study's purposes?
- Avoid questioning the credibility/reliability of the experimenters or authenticity of the data. If the experimenters report certain data, again, take their word for it. For example, even though it's logically possible that the person coding the result of a particular experiment made a mistake, this is not a constructive criticism. Take the data as is, and focus instead on the experimental design, whether it addresses the original question, whether the controls test what they're intended to test, what some major confounding factors might be, etc.

Some writing guidelines:

- It is easier to follow your reasoning if you start by introducing the paper's goals, then briefly summarizing the experimental design/controls, and only then offering your critiques and ideas for future experiments. It's generally confusing to simultaneously critique and summarize the paper.
- Rethink very harsh language, whether for praise or criticism: it's hard to "prove" things in any experimental science... does the experiment really *prove* that X? Also, often questioning things like the "credibility" or "authenticity" of the experimenters and/or their data comes off as quite harsh (and usually is unsupported by any evidence from the paper's contents.)

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