**Richer color vocabulary is correlated with color memory but its relation to perception is unknown**

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Key words: color naming, color perception, color memorization, linguistic relativity

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Hasantash and Afraz [1] investigated the influence of language on perception and memory. Their study improves on prior studies by including a perceptual and a memory task within the same experiment, by taking a within-language individual differences approach, and by including a few other modifications to the design. While the goal of their experiment is worthy, the type of perception task that was used is not suitable for testing the influence of language on perception, and as such, it is also unable to control for confounds in the memory task.

Prior research on the effect of language on perception, including the studies that the authors cite, all examined effects either in RTs [e.g., 2-6] or at the neural level [e.g., 7-8]. The authors of these studies argued that linguistic labels can *facilitate* discrimination among different colors. Importantly, they did not argue that discrimination is impossible if the colors are named with the same label; People regularly discriminate among shades within a single color category. The task that Hasantash and Afraz (2020) used, however, examines ability to discriminate between colors, not the speed of discrimination. This task should be successfully performed by all, and indeed, as Figures 1c and 2 show, performance was at ceiling with almost no variation across people (>75% of participants had errors between 3-6). In other words, the task does not tap an ability that should show an influence of language on thought, and would therefore not be able to detect such an influence even if there was one.

The test of the influence of language on memory uses a novel approach – examination of individual differences in language use within a language. This is an interesting approach, and the results are informative. The authors also replace the binary measure of accuracy with a continuous one which strengthens the study. A main problem with interpreting these results, however, is that, as with any correlational study, it is impossible to infer causality. In this case, the opposite direction of causality - that having better memory or perception of color encourages using a wider color vocabulary – seems reasonable. The authors try to rule out this possibility by arguing that those with larger vocabulary did not have better perception, based on the null results in the perception task. This would have been a valid argument if the perception task had been sensitive enough to detect individual differences in perception, yet, as mentioned above, performance at that task was at ceiling. The ceiling performance probably also explains why perception and memory were not correlated.

To conclude, Hasantash and Afraz [1] show an interesting correlation between color vocabulary and color memory using a new approach. Unfortunately, it is difficult to infer whether it is language that influenced memory or vice versa, and the study does not provide evidence with regards to whether language can influence perception.

Referneces

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