A Computational Companion to Human Ratings is Available

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Human Ratings are increasingly employed in cognitive neuroscience to predict human behavior and neural activation responses in tasks that involve the processing of words, images and sounds [e.g., Bruffaerts et al., 2013]. However, some cognitive scientists are skeptical of their use because of the reasons motivated below:

1

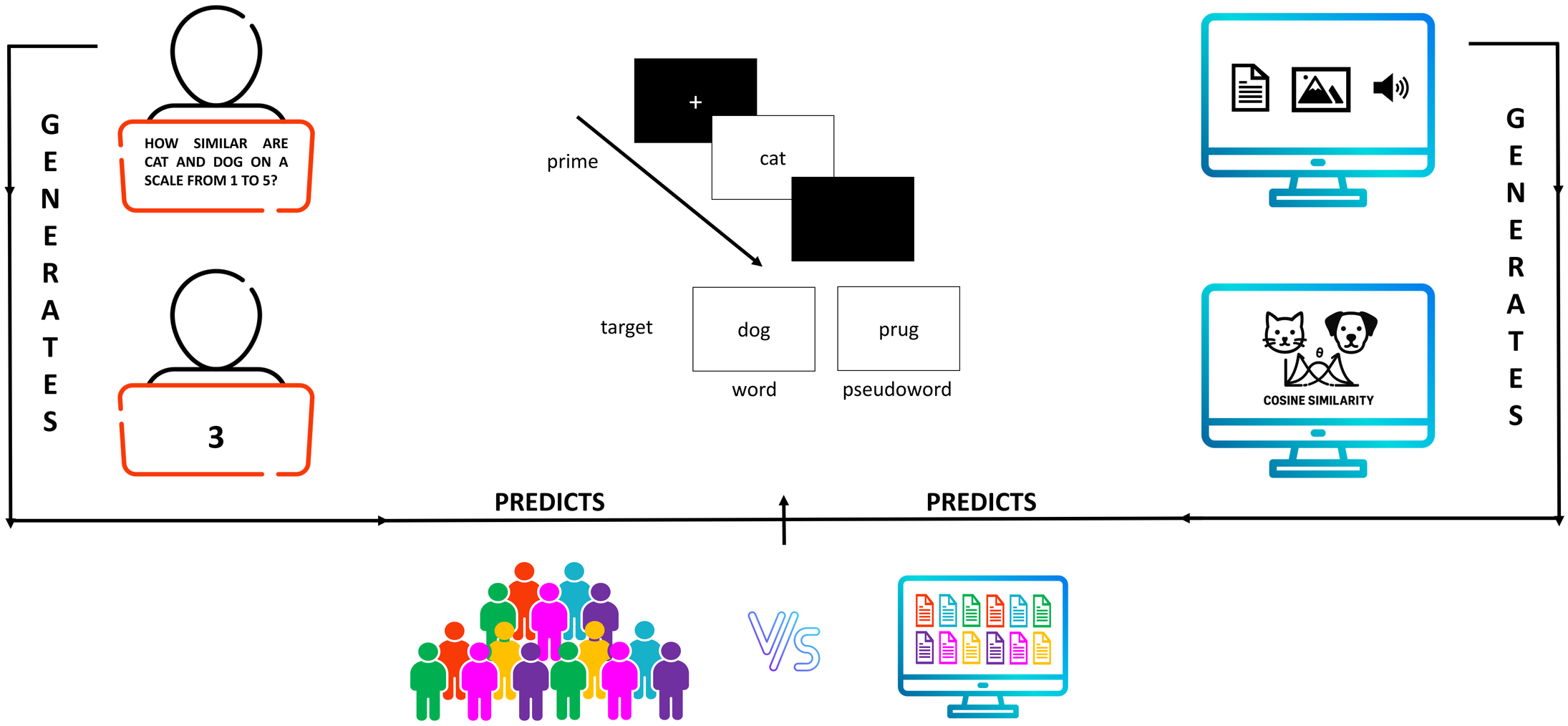
HRs are dependent variables, akin to the variables they are harnessed to predict. For instance, HRs of semantic relatedness predict performance in semantic priming tasks. However, HRs are behavioral measures in need of explanation, too. This introduces circularity in explanation, whereby the phenomenon to be explained (e.g., semantic priming) is merely relabeled [Westbury, 2016].

2

HRs are opaque with respect to the cognitive processes involved when a subject provides them [Jones et al., 2015]. For instance, while similarity ratings predict performance in DRM-tasks [Roediger & McDermott, 1995], they do not allow inferences as per which modality contributes to the ratings themselves (linguistic, visual, auditory).

3

HRs are taxing to collect. Large rating samples are not readily available in all languages, and collecting them is time and money consuming [see e.g. Brysbaert et al., 2014]. This limits cross-linguistic research and penalizes researchers with lower amounts of resources.



Complementing HRs with recent Computational Models obviates issues related to the use of HRs alone. Specifically:

1

CM-derived values are an external source of prediction to the ad-hoc cognitive process employed by humans and can be used as independent variables, avoiding theoretical circularity [e.g., Gatti et al., 2023].

2

CMs allow inferences on which experiential source accounts for the variance. For instance, visual experience better accounts for performance in a visual DRM task as opposed to linguistic experience, and viceversa.

3

CMs are often freely available for several languages, facilitating access and promoting cross-linguistic research [e.g., Bojanowski et al., 2017].

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