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ABX discrimination task: influence of semantic and perceptive categories

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ABX discrimination task has been used in categorical perception study in visual modality (emotional expressions) since N. Etcoff¹. Results of ABX task are traditionally related with the effect of categorical perception, i.e. increasing of distinction on the boundary between semantic categories. In 2007 D. Roberson supposed that results of ABX discrimination task may be explained in terms of category adjustment model, introduced by J. Huttenlocher. D. Roberson, however, supposed that categories, relevant to ABX and category adjustment model are certainly semantic categories. The essential principle of analysis in this study is comparing proportion of the wrong answers X=A and wrong answers X=B. Effect of categorical perception itself does not predict any differences in the number of wrong answers. According to Roberson, category adjustment model predicts, that if A is closer to the center of category, than B, wrong answers X=A will be given more frequently, than wrong answers X=B².

In 2011 R. Hanley and D. Roberson analyzed many experiments and concluded that differences in wrong answers are present in all studies, but these results cannot be interpreted in relation to semantic categories. They interpret them as evidence of specific strategies, not related with real structure of categories, used by participants³.

Results of our experiments⁴, analyzed in terms of the asymmetry of wrong answers, demonstrate generally the uniform pattern: the stronger the increase in the proportion of wrong answers X=A is, the closer A is to the center of category. This was observed for transition series, based on emotional expressions (happiness, anger, fear, disgust, surprise, sadness); faces with modified size and distances of eyes, mouth and nose; series based on faces of different races. Neutral face itself does not evoke asymmetry of wrong answers.

Our interpretation of the observed results of ABX task is related to both perceptive and semantic categories. We suppose that belonging to different semantic categories increases performance due to the effect of categorical perception, and at the same time belonging to the same perceptual category decreases performance due to the perceptual magnet effect. Both semantic and perceptual categories are not rigid, their structure and content may be adjusted during a relatively short experimental study. Asymmetry of wrong answers in ABX discrimination task is the essential characteristic, which directly depends on the used stimulus and presentation conditions.

References

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