Probability matching and antimatching in hide-and-seek

Peter DiBerardino
University of Waterloo, Waterloo, Ontario, Canada

Britt Anderson
University of Waterloo, Waterloo, Ontario, Canada

Abstract

What is an ”opposite” probability distribution? Such a notion would be useful for decision making under uncertainty when the goal is to avoid, rather than pursue some outcome. Here, we utilize an inversion of probability matching that we call ”probability antimatching” to derive a formal definition of opposite probabilistic representations in humans. The children's game of hide-and-seek is a natural way to test both traditional probability matching when seeking, and probability antimatching when hiding. Participants are informed of a simulated child's tendencies for hiding and seeking in rooms of a house presented graphically on a computer screen. Participants' room-choice frequencies are predicted by a probability vector reflection across the uniform distribution. Participants are also more likely to use an optimal strategy when hiding than when seeking. With this work, we establish a formal definition of probability antimatching and opposites for models of probabilistic belief.

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