Abductive inference in word learning

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Humans readily infer the meanings of novel words, but it is commonly assumed that the only relevant form of inference is induction, a term sometimes used to mean anything that is not deduction, and sometimes to mean specific types of non-deductive inference (such as category generalisation and Bayesian inference. See Tenenbaum et al. 2006). I argue that a third kind of inference — abduction — plays a role in learning words, and indeed plays a crucial role in certain contexts, such as word learning in the absence of an established symbolic system. Such contexts are significant in accounting for how an ancestral species transitioned from non-symbolic to symbolic forms of communication.

According to Peirce (1934), abduction generates novel hypotheses, deduction derives their necessary consequences to yield predictions, and induction evaluates these predictions to decide which hypothesis is the most probable explanation of a given case. Peirce claims that abduction is more insightful than deduction or induction. To test this, in my first experiment I show how subjective reporting, an established diagnostic in insight problem solving (Bowden and Jung-Beeman, 2007), can be used as a diagnostic for abductive inference. In my second experiment, I apply this diagnostic to show that a word-guessing task is more insightful (and thus more abductive) when hypotheses must be generated than it is when hypotheses are given and merely evaluated (a case which is more inductive).

References

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