

READING NOTES: SIMPLE MINDS: A QUALIFIED DEFENCE OF ASSOCIATIVE LEARNING

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Caveat Emptor

In this review article, Cecilia Heyes [1] argues that studies attempting to discern cognitive learning often fail to consider associative learning creating a blindspot in the research. Through providing a review of the literature and one study, Horner et al, in particular she describes how association could be the causative mechanism for the observed rather than examples of higher cognition (in this case prosocial behaviour). However, Heyes, through further review of the literature and the classics of Behaviourism, Morgan's Cannon, shows that classical arguments for the cannon are flawed as follows:

- **historically** the rules of the cannon are not rigid enough allowing "a higher faculty without a lower one, as well as a lower faculty without a higher one—and is therefore 'too permissive to justify the canon'" [1]
- **evolutionarily** evolvability, cost, and phlogenetic differs would suggest that evolution of a higher cognitive function may be evolutionarily preferred in different niches resulting in a failure for the cannon to universally apply.
- **simplicity** which has an anthropomorphic character (i.e., we as humans define what simplicity is for humans). At times the simpler solution is the more complex result (i.e., cognitive) as written by Heyes "Morgan's own justification for the canon is flawed, and subsequent attempts to support it with evolutionary arguments and by appeal to the virtues of simplicity have identified factors that sometimes favour associative explanations and sometimes favour super-cognitive explanations." [1]

The primary conclusion of this paper is that in order to discern if learning in some scenario is associative or cognition, it is vital that we design and perform experiments to answer this question explicitly rather than post hoc. This represents a challenge to the field as it requires deeper thinking about both possible associative and cognitive outcomes and implicates in each experimental design (e.g., thinking about differences of degree in kinship to determine prosocial behaviour, real effect sizes and appropriately powered studies).

REFERENCES

- [1] C. Heyes, "Simple minds: a qualified defence of associative learning," *Philos. Trans. Roy. Soc. B: Biol. Sciences*, vol. 367, no. 1603, Oct. 2012, doi: 10.1098/rstb.2012.0217.

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