What Prototypes Can Teach Us About Unknown Knowledge

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INTRODUCTION

Aim:
• Provide a model to describe implicitly learned structure.

Criterion:
• Illustrative and usable in future research to explore the relationship between intuitive and analytical intelligence.

Proposal:
• First Principal Component as a prototype model.

METHOD

Stimuli:
• Images randomly composed of 6x6 black and white squares; unique stimuli for each participant.

Trial:
• 10 stimuli presented successively with 9 coloured squares interposed; random order.

Cover Task:
• Detect a red square, the ‘target’, in the middle of the sample.

New Paradigm:
• Prototype Priming, i.e. RTs are measured.

Learn set:
• Stimuli grouped with the target according to their similarity with the prototype.
• Overall 1400 presentations of stimulus samples; i.e. 700 RTs.

Test set:
• New stimuli.
• One half grouped analogously to learn set (Sti1), the other half inversely (Sti2).
• 100 presentations overall, i.e. 2x25 RTs.

Control group:
• No grouping in the learn set, no prototype priming possible.

RESULTS & DISCUSSION

Interview:
• Participants do not have any explicit knowledge

Learn set:
• Both groups learn significantly (p_{exp} < .001, p_{con} < .001)
• Experimental group learns more than control group (p < .001)

Test set:
• Sti1 faster than Sti2 (p < 0.05)
• Experimental group (Sti1) faster than control group (p < 0.01)

Interpretation:
• All predictions confirmed: Besides habituation to the setting, there is prototype learning and transfer to the test set.

CONCLUSIONS

• Prototype Priming is a fruitful paradigm
• Confirmation of the model
• For generalisation, replication with a larger sample sensible (here only: 7 in exp. and 4 in control group)
• Two more conditions: exemplar grouping and explicit instructions