

Polymorphous category acquisition

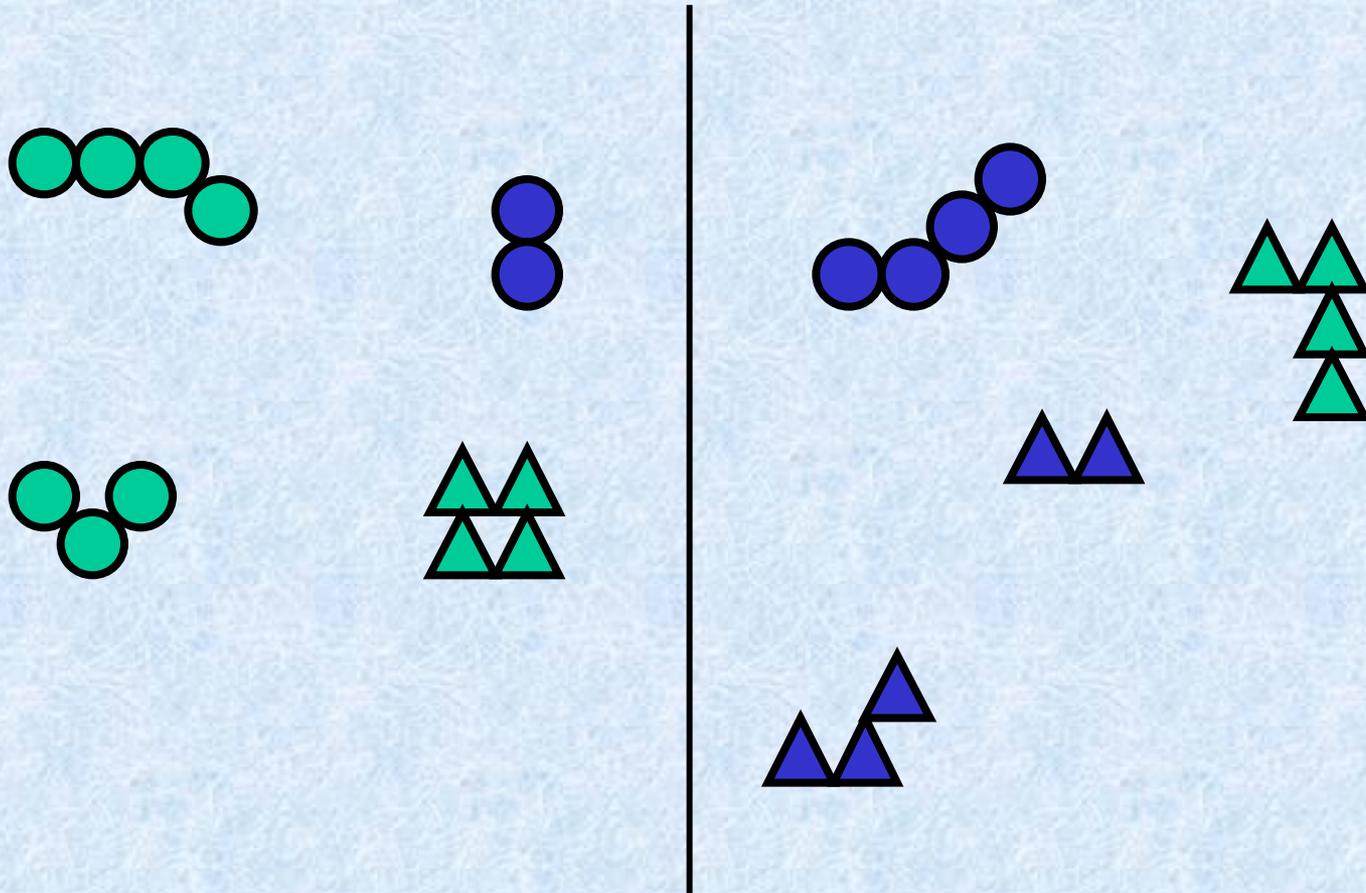
Andy Wills

Lyn Ellett

Stephen Lea

University of Exeter

Polymorphous concept

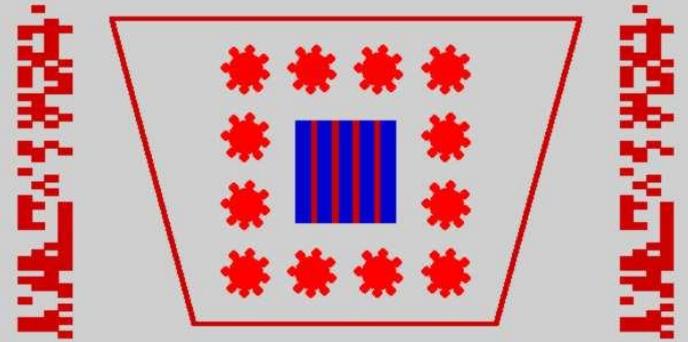


- At least two of green, symmetrical and circles.

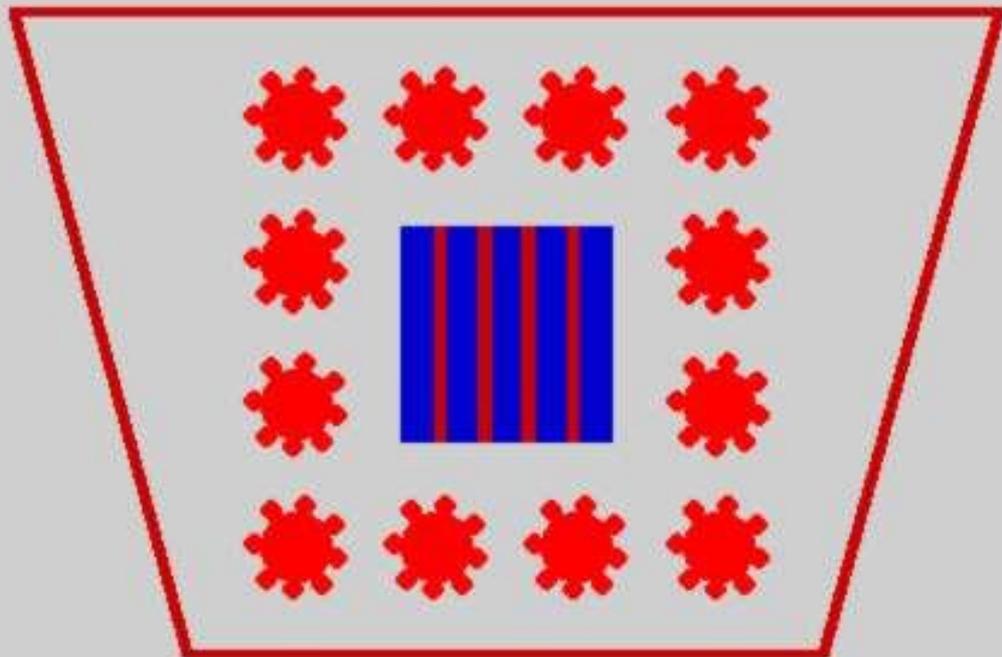
Starting point

- What is it that makes polymorphous concepts so difficult?
 - **Load:** Lots of different things to learn at the same time.
 - **Conflict:** Feature->Category association is not reliable

The Concept



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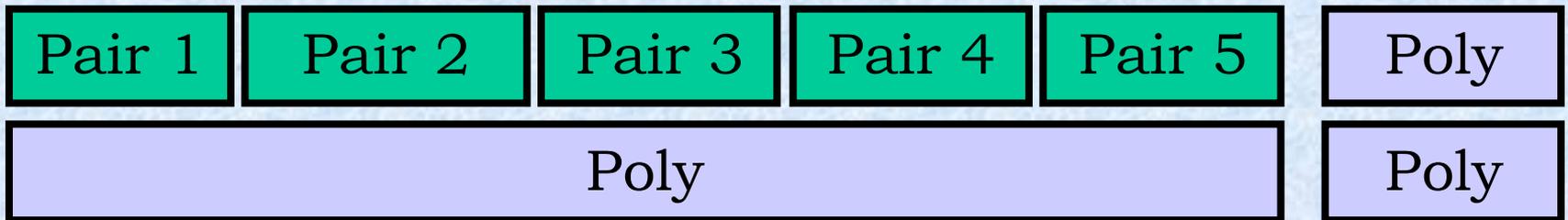
Correct.

It was category B.

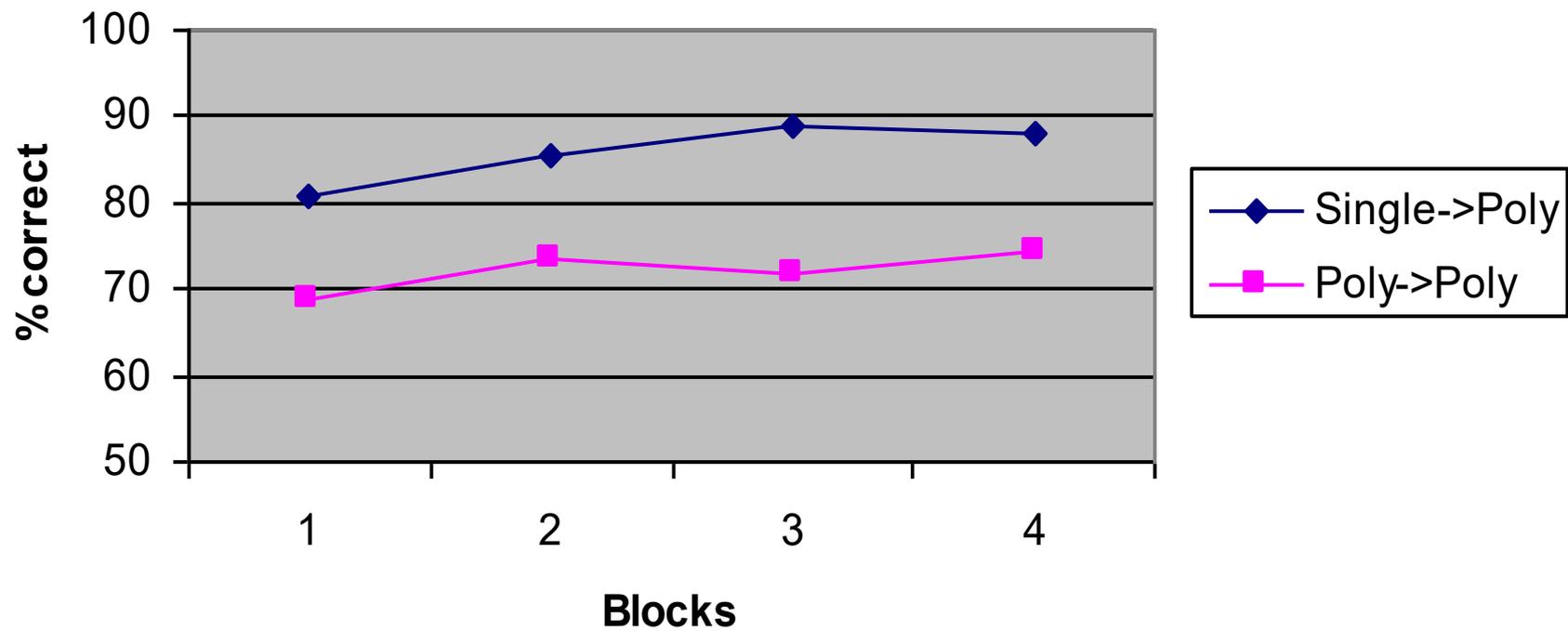
The pre-training

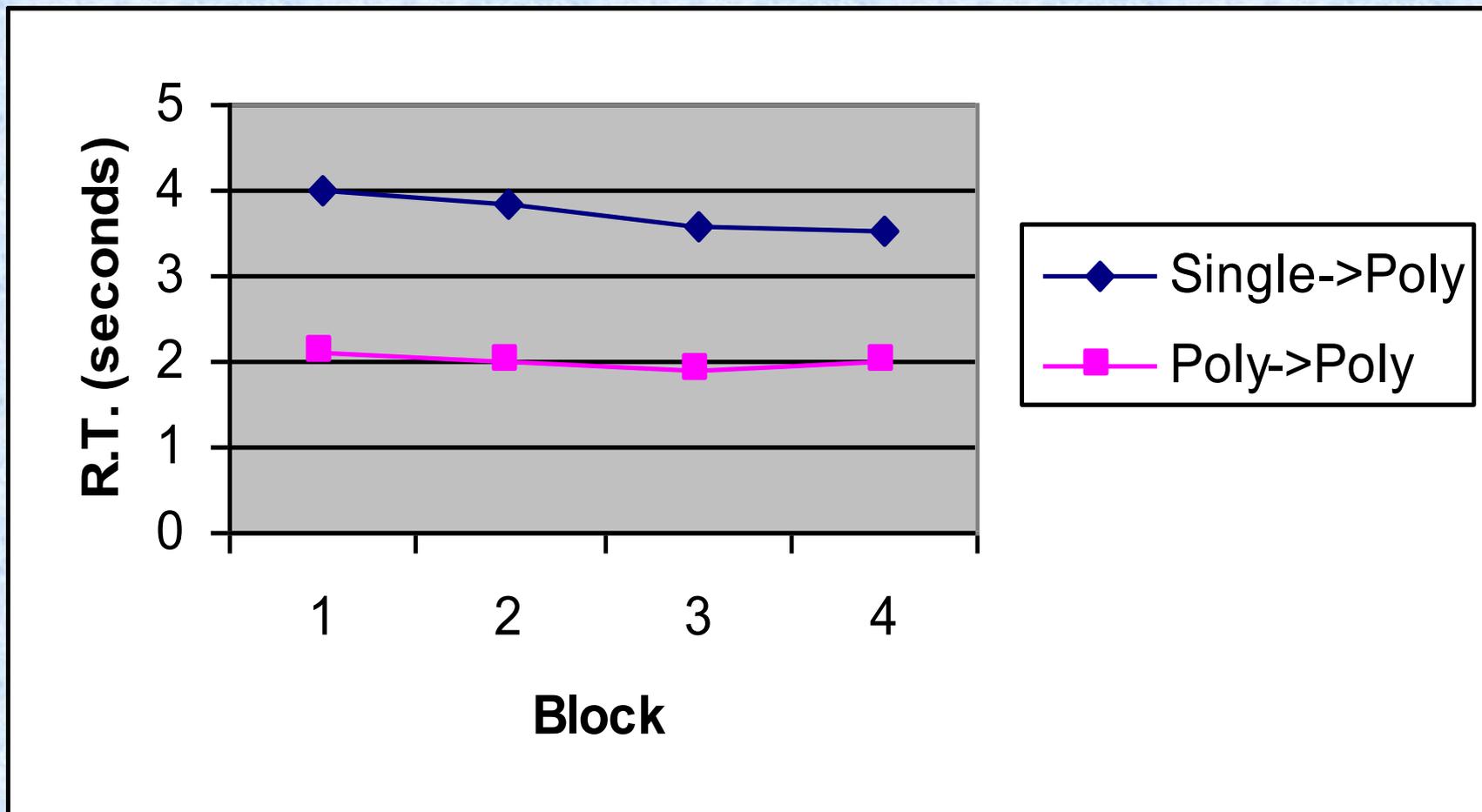


Experiment One



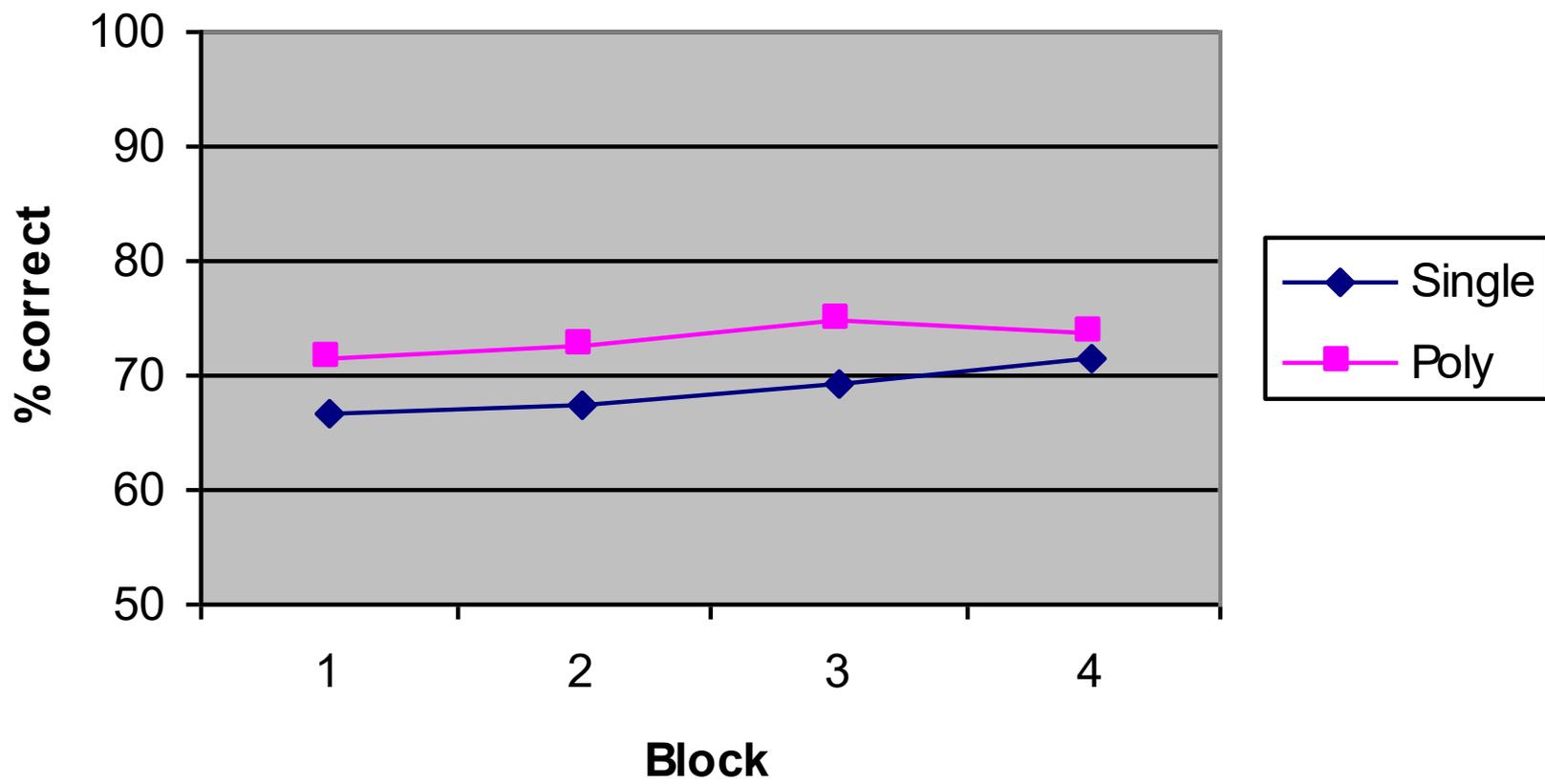
- “To criterion” training on each pair
- Transfer to the full concept
- Matched controls

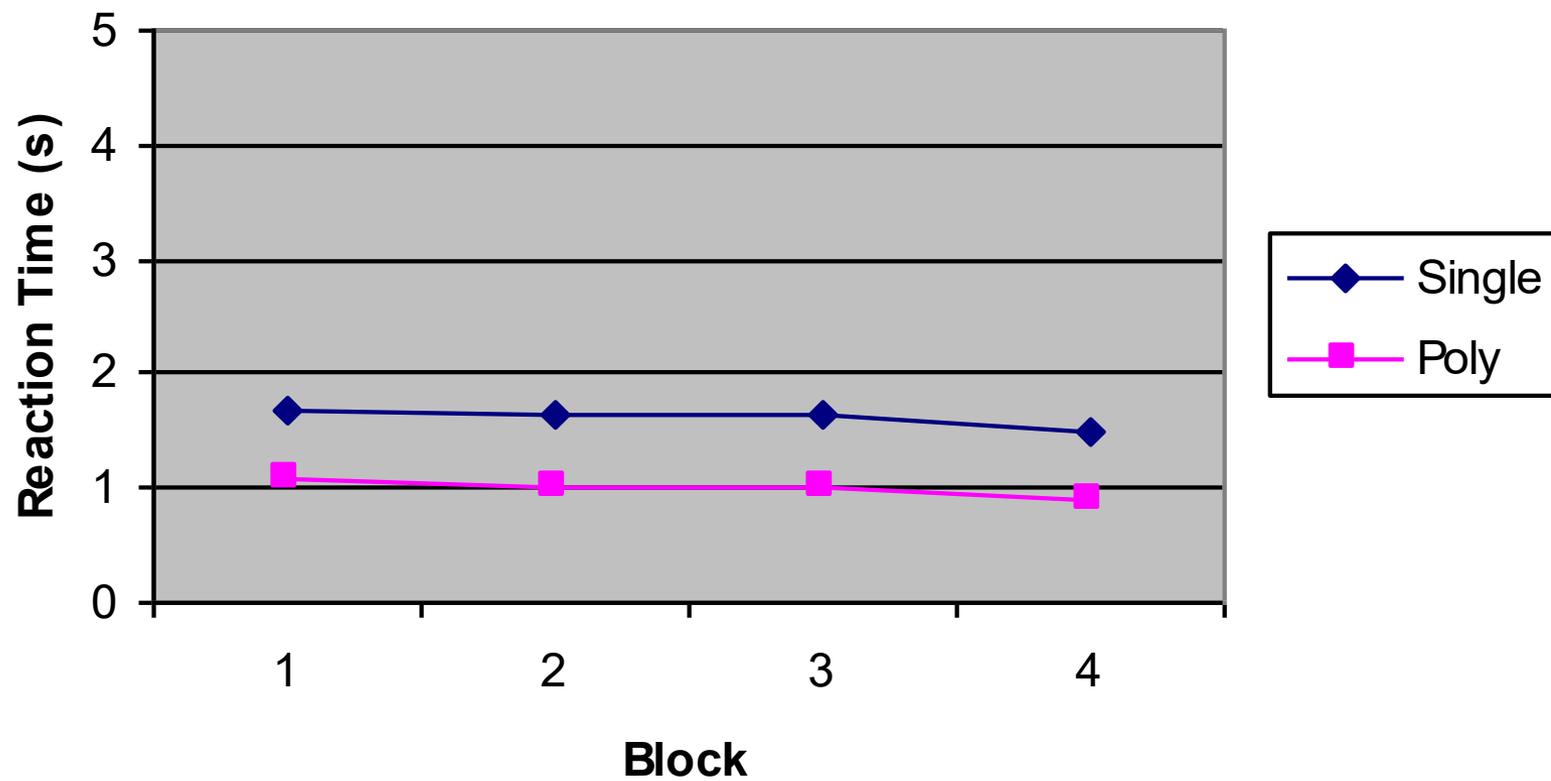




Experiment Two

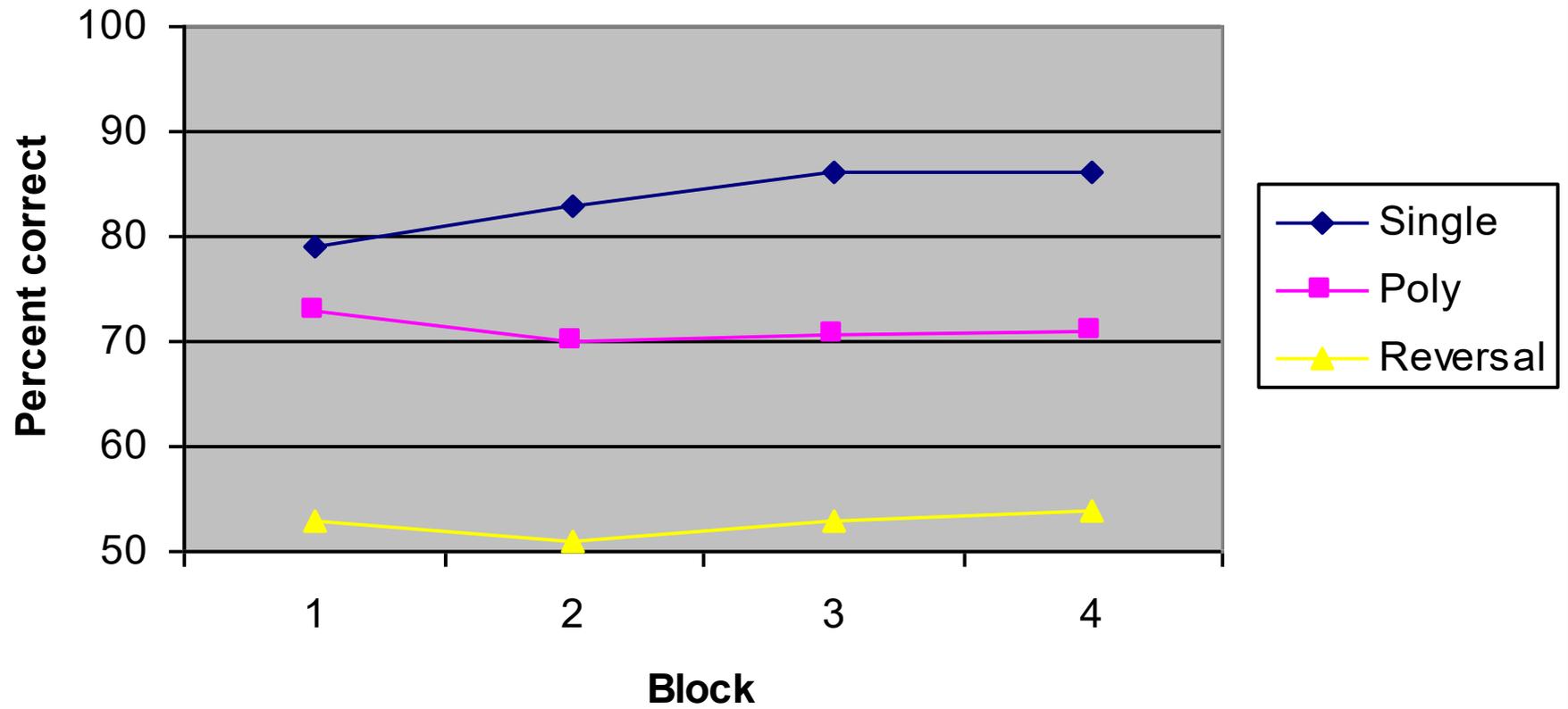
- Fixed amount of phase one training
 - 4 blocks for each of 5 dimensions
(estimated from Experiment One).
- Time pressure
 - Annoying “HURRY UP” sign flashes
after 3000ms
(estimated from Experiment One)

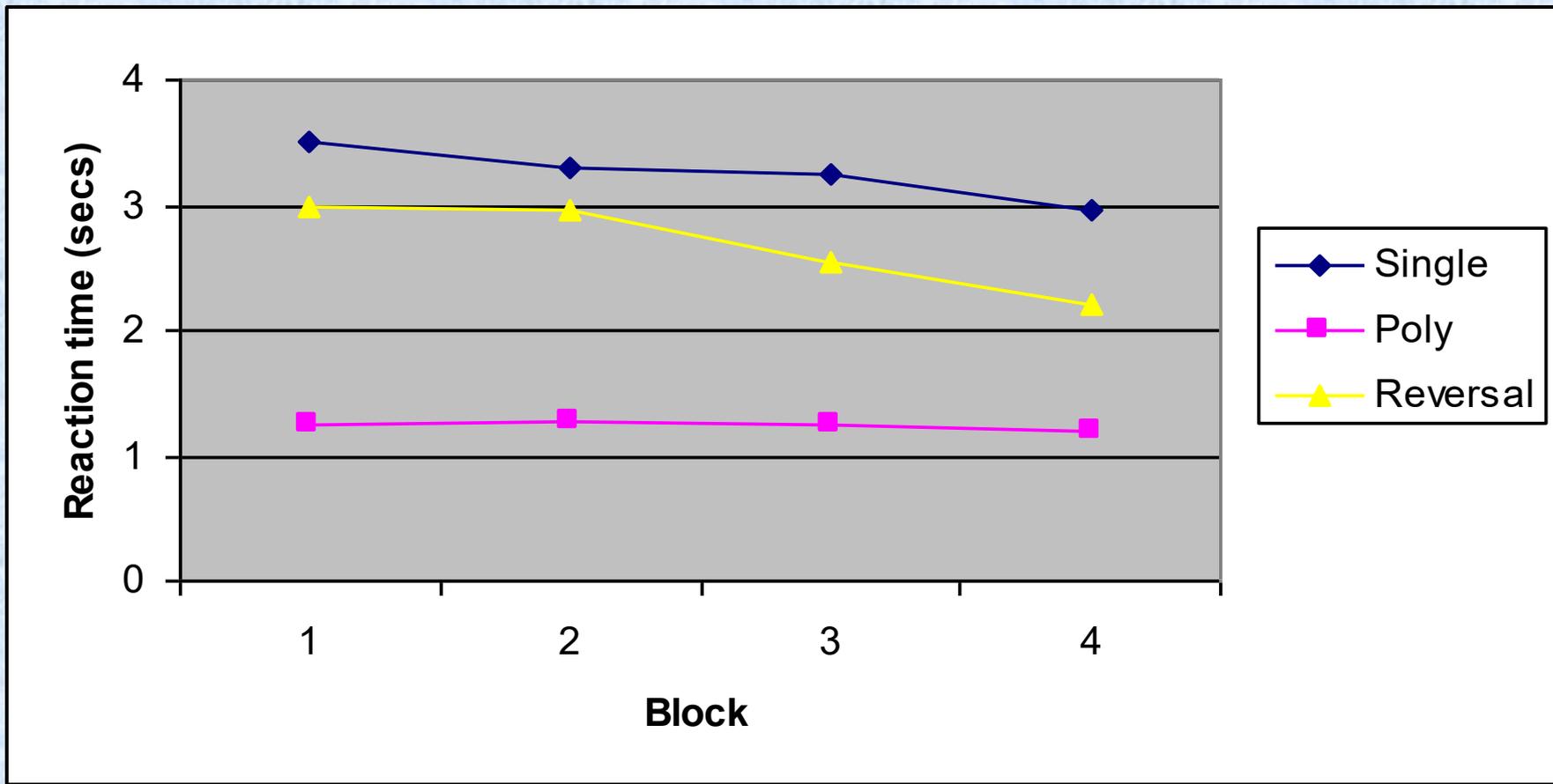




Experiment Three

- No time pressure
- Reversal condition
 - 3 out of 5 associations swapped.
 - e.g. Vertical stripes now = category A.

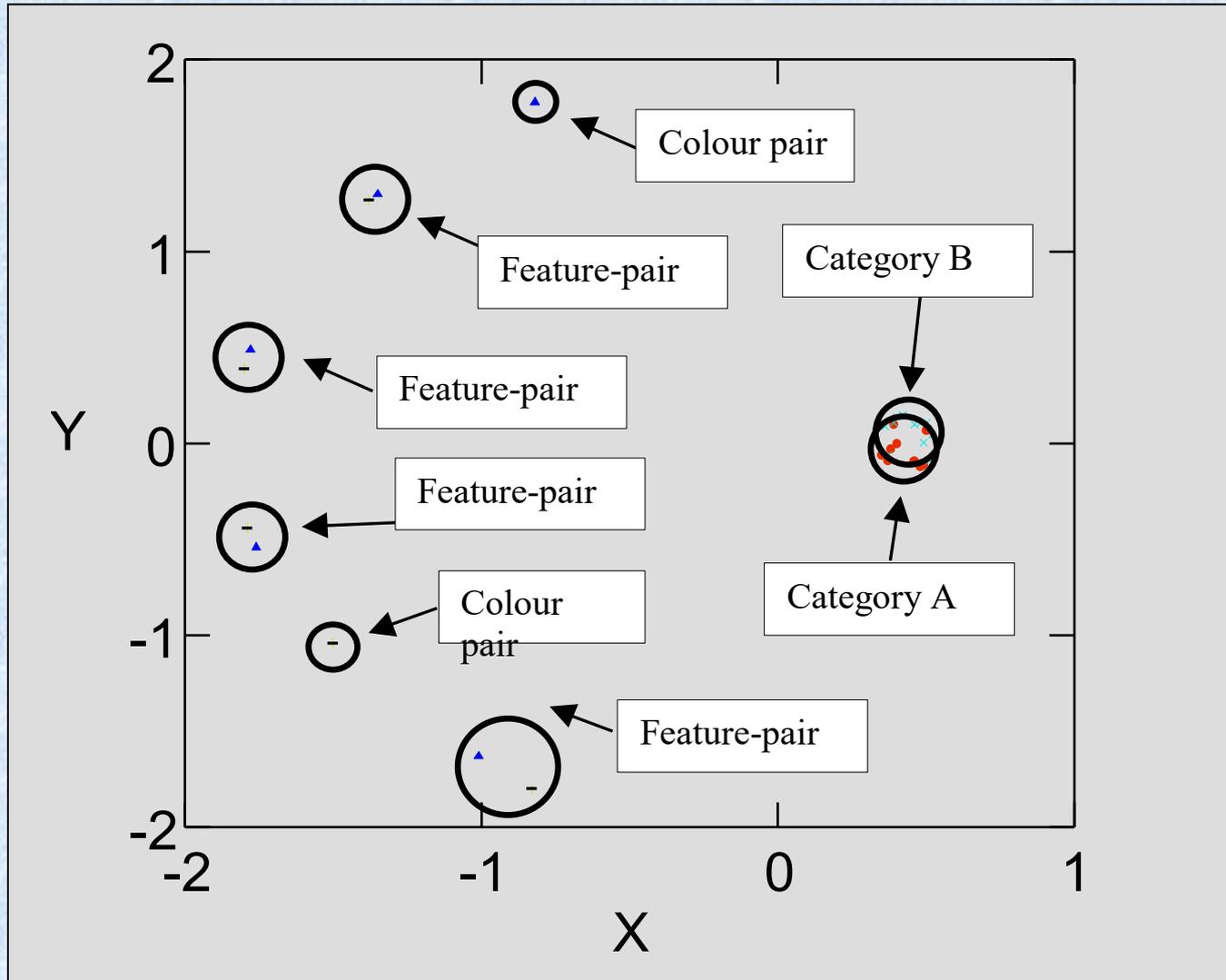




Theoretical implications

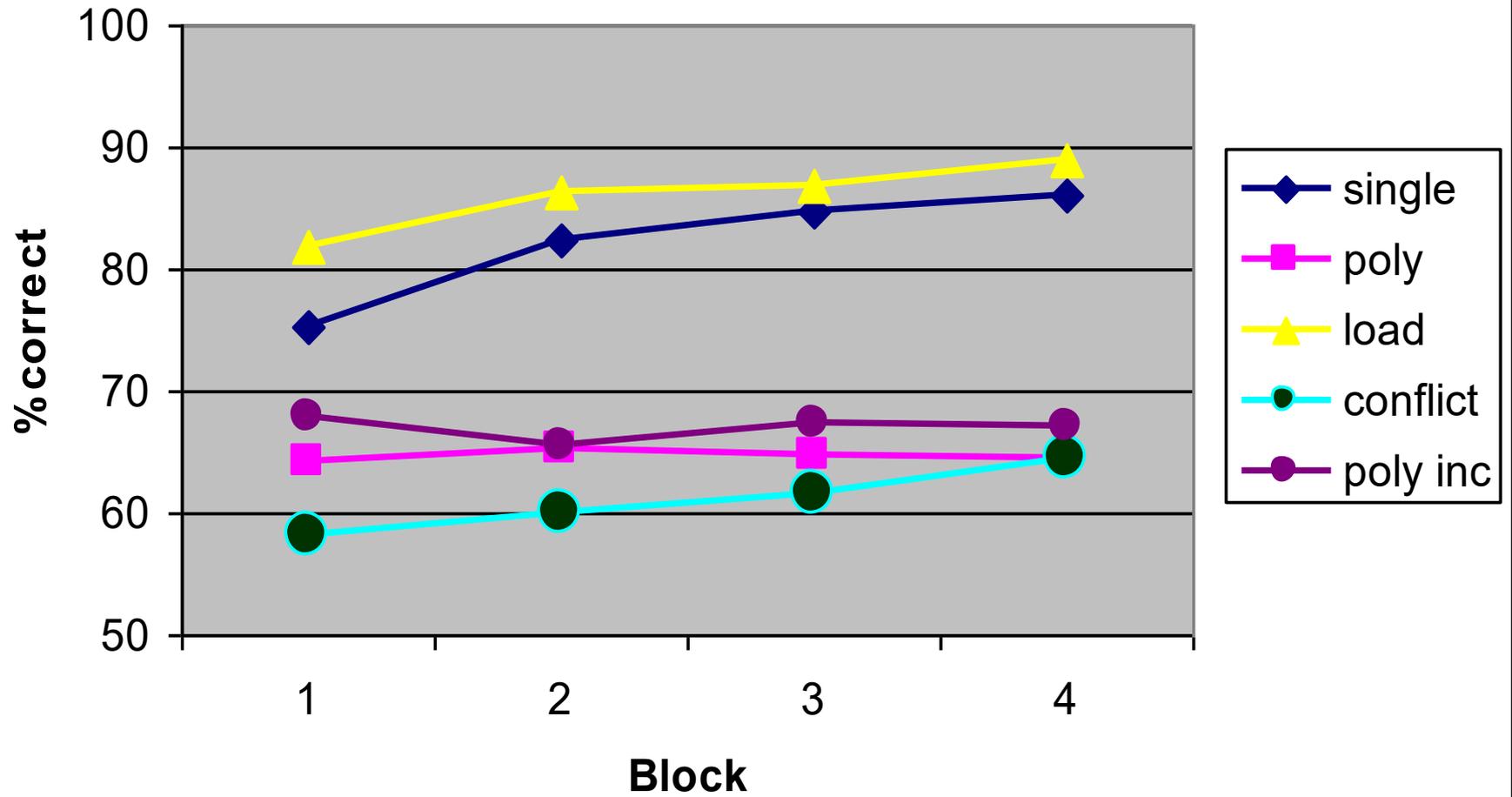
- Feature-based models
 - Hebbian-based.
 - Error-correcting.
- Instance-based models
 - Array models
 - GCM and descendants

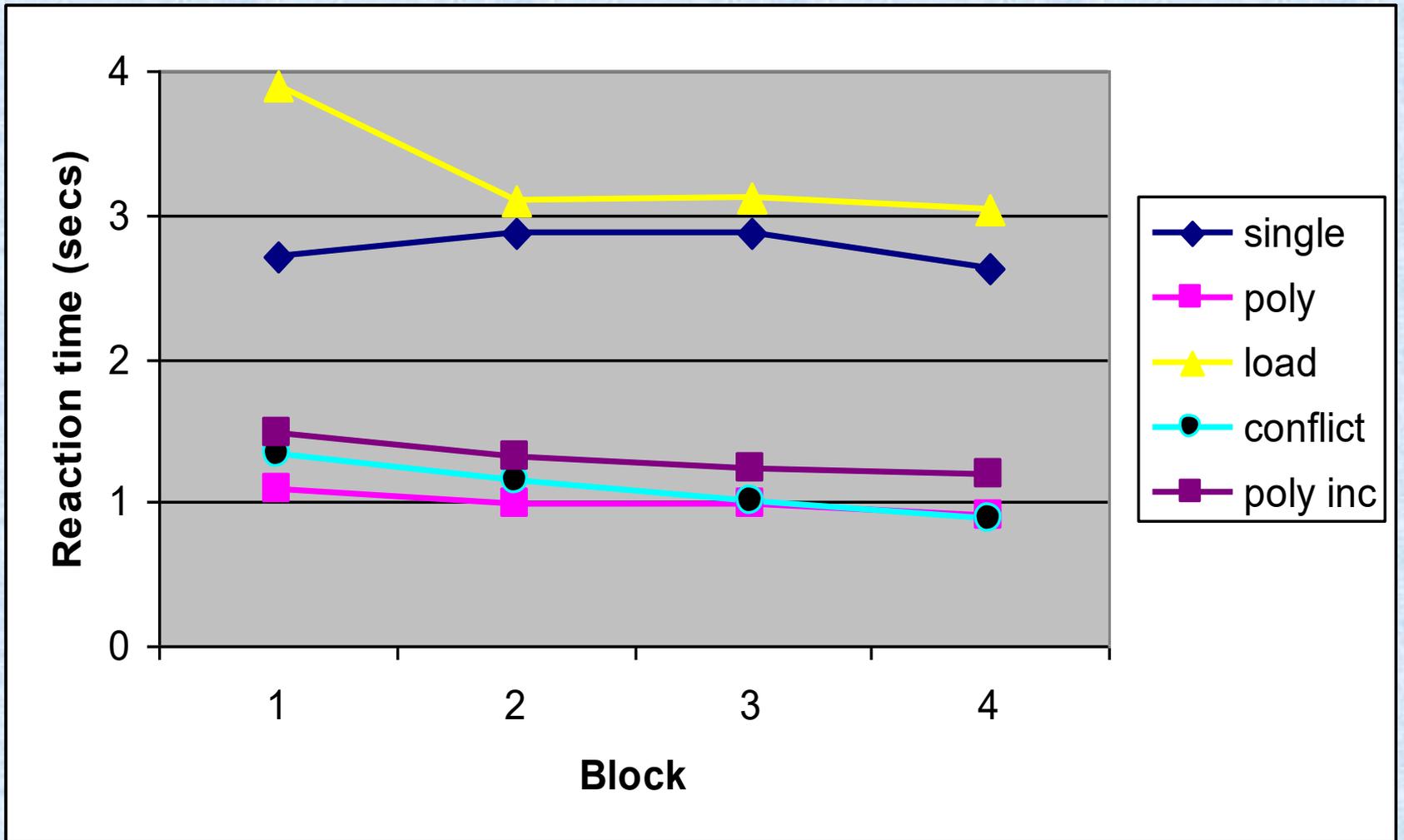
Experiment Four



Experiment Five

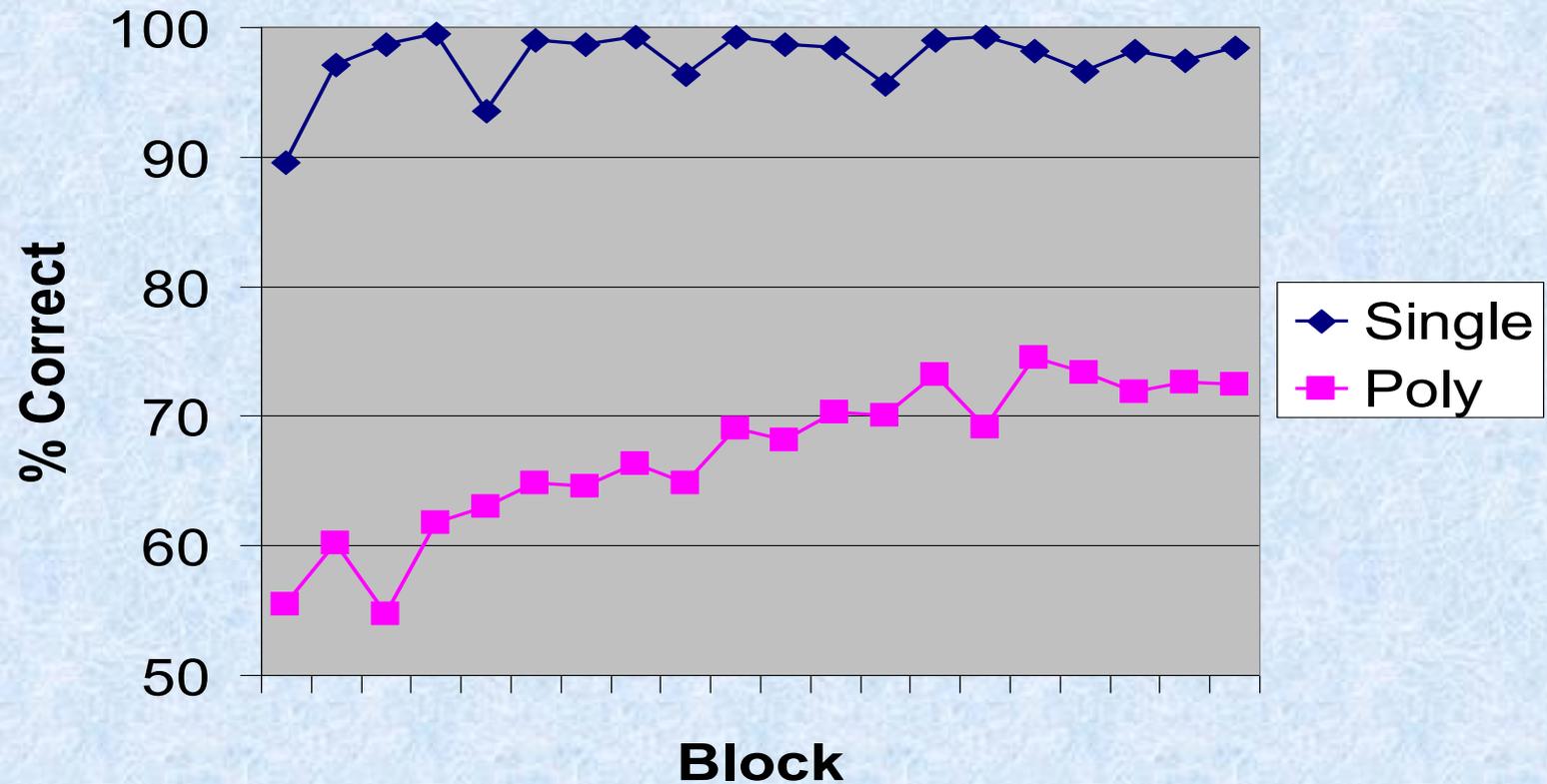
- Learning Load
 - Inter-mixed training
- Conflicting information
 - Unreliable training
- Feature discovery
 - Incremental construction



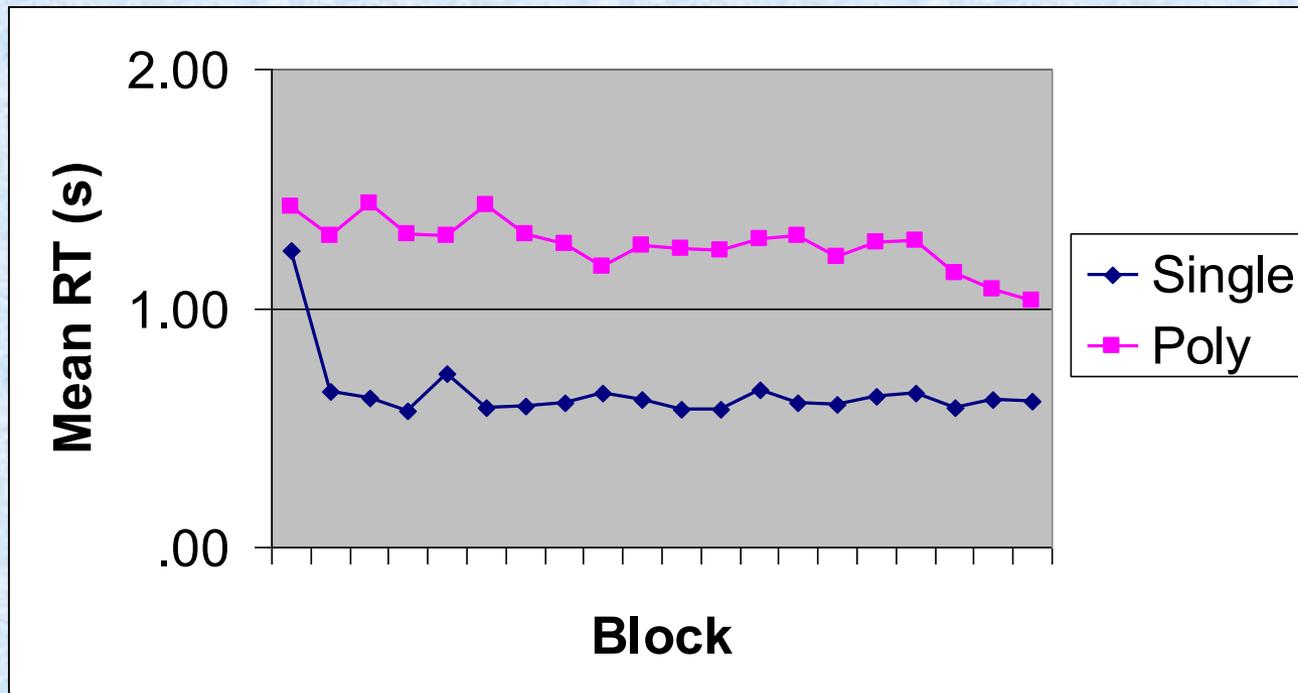


Extra slides

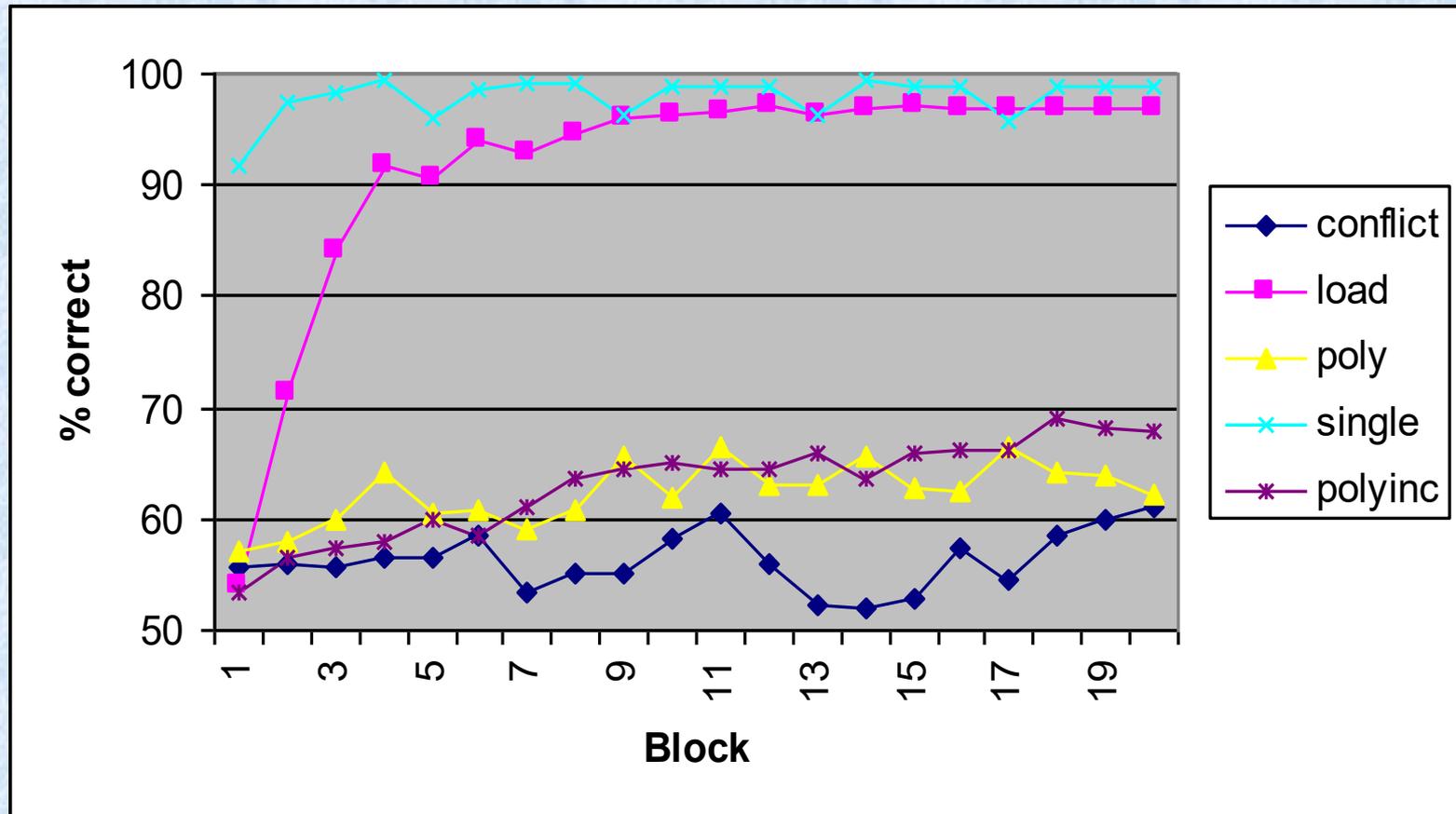
Experiment 2: Phase 1



Experiment 2: Phase 1



Experiment 5: Phase 1



Experiment 5: Phase 1

