Trainability and (selective) transferability of interference-resolution skills
Neuroscience and Cognitive Science Program, Center for Advanced Study of Language
University of Maryland, College Park

1. BACKGROUND & HYPOTHESES

- Interference resolution (IR) refers to the ability to regulate mental activity to resolve among competing/conflicting representations.1,2
- Cognitive training designs provide a unique opportunity to glean the degree to which tasks tap similar underlying resources; namely, if an ability is trainable, then it should confer transfer to tasks relying on shared mechanisms (i.e., process specificity).3,4
- Research Question: Does practicing a task designed to tap IR (n-back-with-lures)5—compared to others with this element removed—confer selective benefits on an untrained recognition task6 containing high-IR items?
- Hypotheses:
  1. According to a process-specificity account, subjects training on an IR task—but not other tasks—should demonstrate pre/post improvements on the untrained IR recognition task.
  2. Further, only high-IR recognition items should improve following training.

2. METHOD

2.1. Training Study Design

- **Block 1: 3-Back-with-Lures**
  - No Lures Training (Low IR): Non-adaptive 3-back (N = 22)
  - Lures Training (High IR): Adaptive 3-back-with-lures (N = 30)

- **Block 2: 6-Back-with-Lures**
  - No Lures Training (Low IR): Adaptive 6-back (N = 22)
  - Lures Training (High IR): Adaptive 6-back-with-lures (N = 30)

2.2. Transfer Measure: Recognition Conflict

- Global Block (Low IR)
  - Indicate if each probe was in the same location as the recent memory list.
- Local Block (High IR)
  - Indicate if each probe was in the same location as the recent memory list.

3. RESULTS

3.1. Posttest N-Back-with-Lures

- Only the Lures trainees improved from pre to posttest and only on targets and lures of the local block.

4. SUMMARY & CONCLUSION

- Manipulation check: Each training group improved where expected
  - Lures trainees (vs. no-lures trainees) showed superior performance on lure items on the posttest n-back task.
  - The only training group to demonstrate both greater sensitivity and a higher response criterion on the posttest n-back task was the Lures group.
- Selective transfer to high-IR recognition trials by the Lures group only
  - Lures trainees, but no other group, showed faster response times following training on target and lure items in the high-IR local block.
  - A higher response criterion was observed for the Lures group only from pre to posttest on the high-IR local block; no other training groups showed this effect and no such effects were seen in the low-IR global block.
- Findings provide support for the trainability of process-specific IR abilities
  - Selective pattern suggests a need for IR mechanisms to perform the local block.
  - Improvement on the transfer task is not due to motivation alone, as all training tasks are similar, but the only group to improve was presented with an IR demand.
  - Important implications for enhancing IR measures beyond the present transfer task (e.g., resolving among competing interpretations while processing language).

5. REFERENCES


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