Accuracy, confidence and motivation in children's insight problem-solving

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Background

Insight: Sudden understanding followed by epistemic feelings of certainty, ease, and positive affect [1].

Adults' insights associated with[2]:

- accuracy
- confidence
- motivation

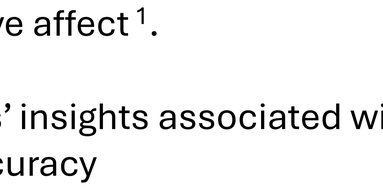
To date, there is little systematic research on children's insight problem-solving.

Methods

Participants:
Children 4-8 years, N=160, 47% girls.

AhaClues:
Remote associate task[3] for children.

Clues:
SNOW
SCARF
CARROT



Solution:
SNOWMAN

Aha-experience:

- Experimenter observation.
  Sudden answer after delay; gasp before answer; energetically shouting the answer.
- Adjusted self-report.
  Children who passed a control task – 43.8%.

Confidence:
Self-report [4].

Motivation:
Bonus task: continue with one more of the same or switch to a new task.

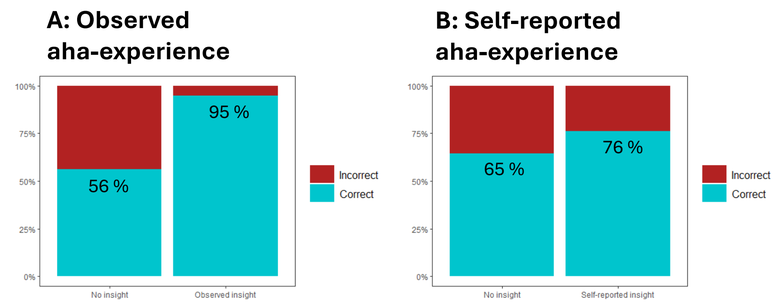
Results

Accuracy

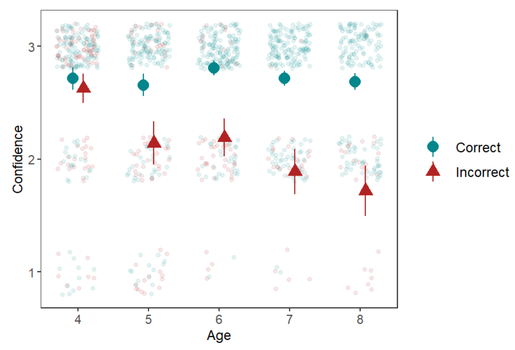
Aha-experiences were associated with higher accuracy.

- Observed: OR* = 11.8, $p < .001$, $N_{trials} = 1280$.
- Self-reported: OR* = 2.3, $p = .003$, $N_{trials} = 560$.

* Results from a generalized linear mixed model, accounting for age and repeated measurement. See paper for complete results – QR code below.



Confidence



N = 1063 trials
(«don't know»-trials excluded)

We found no association between aha-experiences and confidence.

- Observed: OR* = 1.46, $p = .138$, $N_{trials} = 1063$.
- Self-reported: OR* = 0.67, $p = .287$, $N_{trials} = 471$.

Age interacted with accuracy in predicting confidence.

- Observed: OR* = 2.98, $p < .001$, $N_{trials} = 1063$.
- Self-reported: OR* = 2.83, $p = .005$, $N_{trials} = 471$.

* Results from a generalized linear mixed model, accounting for age, accuracy and repeated measurement. See paper for complete results – QR code below.

Motivation

128 children (80 %) chose to switch;
32 children (20 %) chose to continue.

Observed:
OR* = 1.5, $p = .003$, $N_{participants} = 160$.

Self-reported:
OR* = 1.1, $p = .644$, $N_{participants} = 70$.

* Results from a logistic regression. See paper for complete results – QR code below.

Conclusion

- In line with adult research, children had more aha-experiences (both Observed and Self-reported) when they had found the correct answer compared to when they gave incorrect answers.
- Children were not more confident in trials with aha-experiences compared to trials without aha-experiences.
- Observed, but not self-reported, aha-experiences were related to motivation on a bonus task.

References

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Funded by The Research Council of Norway

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