Children Use Causality to Guide Question Asking

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Question:

Can children (5- and 7-year-olds) use their knowledge of real-world **causal relationships** to identify relevant questions during information search?

Background:

❖ By age five, children can evaluate and identify more effective questions when directly shown the structure of an information search task (Ruggeri et al., 2017).

❖ But the evidence for whether children will be able to extend this ability when question evaluation requires abstract, conceptually rich inferences from prior knowledge is mixed:

➢ Older children apparently struggle to identify relevant questions for information search in real-world contexts (Jirout & Klahr 2020, 4-7yrs; Davidson, 1991, 7-14yrs)

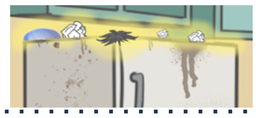
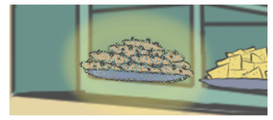
➢ As early as age four, children draw on their expectations about abstract causal relationships to guide their inferences (Magid et al., 2015; Tsividis et al., 2015)

Method:

Ppts heard a story about an event with unknown cause. The description included details suggesting traits of the true cause.

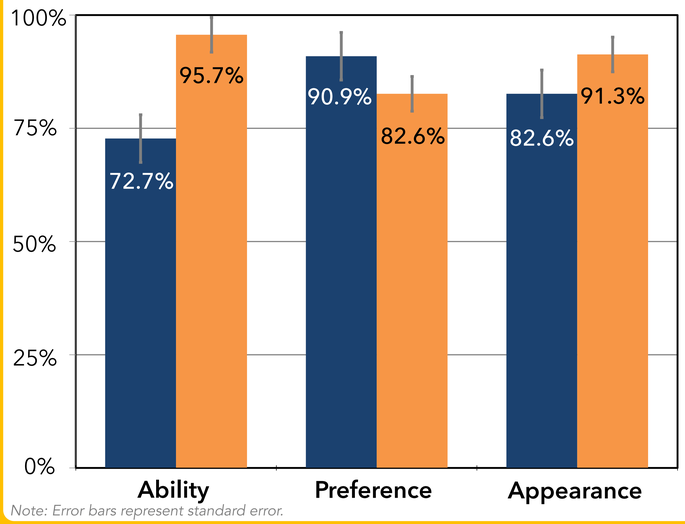
In **three trials**, children were offered a forced-choice between two questions. Both questions targeted similar information, but one had a causal relationship to a story detail, and the other did not.



"For each pet, we can ask…"	***Relevant:***	***Irrelevant:***	***Clue from Story:***
Ability trial: *"… can it **climb** or can it make **noise**?*	climbing	noise	 *"There was a mess on top of the fridge."*
Appearance trial: *"… what color **eyes** does it have or what color **fur** does it have?"*	fur color	eye color	*"There was black fur all around."* 
Preference trial: * *"… what does it like to **play with** or what does it like to **eat**?"*	eat	play	 *"There was the rattle, the ball, and the chips, but the cookies were missing."*

** Note: Half of participants presented with a missing toy, rather than a missing treat.*

Percentage of relevant questions selected



Note: Error bars represent standard error.

Preliminary Results: (Current N = 47, Target N = 96)

Five-year-olds *(N = 24)* Seven-year-olds *(N = 23)*

➢ The proportion of relevant questions chosen (83.3%) was significantly greater than chance ($p < 0.001$; 95% CI = 74.0%, 90.4%).

➢ Performance was not significantly different across age groups (Wald, $z = 0.61$, SE = 0.33, $p = 0.55$).

Both age groups overwhelmingly chose the questions with a causal relationship to a clue in the story.

Conclusion: Children use existing causal knowledge to identify relevant questions, suggesting causality may provide a powerful means for guiding information search.

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