Discerning minds: Are children skeptical of an unjustifiably confident informant?

Rachel L. Severson* University of Montana

Susan A. J. Birch University of British Columbia

Introduction

Rather than passively absorbing knowledge from others, **children are discerning in whom they learn from** (e.g., preferring to learn from individuals who are accurate, prestigious, or confident [1, 2, 3]).

Although ideally one's degree of **confidence would be highly correlated with their knowledge, it is possible that one's confidence is unjustified**—that is, they are overconfident [4].

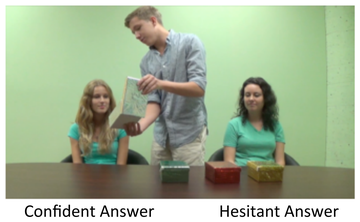
1. **Do children prefer to learn from an individual whose confidence is well-calibrated with their knowledge**? Or do they prefer to learn from a confident individual, regardless of whether their confidence is justified?
2. Does an **individual's calibration influence children's impression of how smart that individual is**? If so, do children prefer to learn new information from the "smarter" individual?

Method

502 children 3-12 years (*M*=6.42 yrs., *SD*=2.36; 50% female) were randomly assigned to either the **Informed** (*N*=241) or **Uninformed Condition** (*N*=261). 56% reported child's ethnicity as European (61%), Asian (23%), Mixed (11%), or Other (4%).

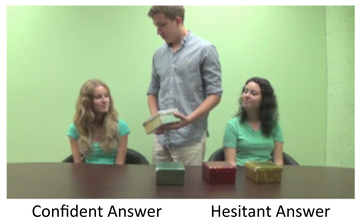
History Phase

Models were shown (**Informed**)/not shown (**Uninformed**) boxes' contents and asked to identify contents. One model answered confidently, the other hesitantly.



Confident Answer Hesitant Answer

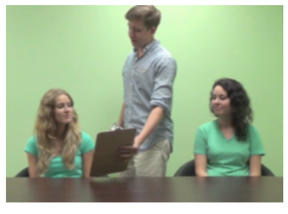
Informed (shown contents)



Confident Answer Hesitant Answer

Uninformed (not shown contents)

Test Phase 1: Four Endorse Trials



- Models were shown a picture of an "unusual animal" and were asked to name the animal.
- Each model confidently provided a different novel name (e.g., "Modi" or "Toma")
- Participants were asked, **"What do you think it's called – a Modi or a Toma?"**

Test Phase 2: Four Ask Trials

- Participants were shown pictures of other unusual animals.
- Participants were asked, **"Who do you want to ask what animal this is? Who do you think will know that?"**

Post-Test Questions

- Did Amanda and Emily get to see inside the boxes?
- Did Amanda/Emily know what was inside the boxes?
- Who do you think is smarter?

Results

Manipulation Check

- ***Memory:*** Did Amanda and Emily get to see inside the boxes? **92.5% correctly recalled** whether they had seen inside boxes.
- ***Looking leads to knowing (Fig. 1):*** Did Amanda/Emily know what was inside the boxes?

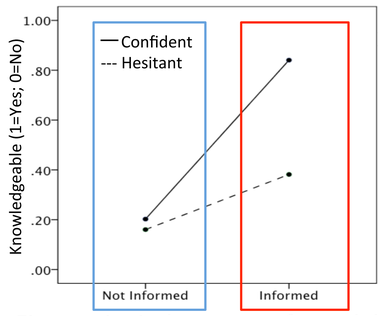


Figure 1. Judgments of models' knowledge of boxes' contents.

- Model x condition interaction (*F*(1,442)=65.76, *p*<.001, partial η^2=.13)
- **Informed Condition: Both models had knowledge**, but the **confident model was more knowledgeable** than the hesitant model.
- **Uninformed Condition: Both models lacked knowledge**.

Who's Smarter?

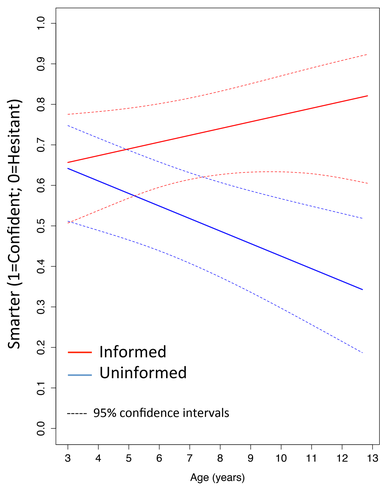
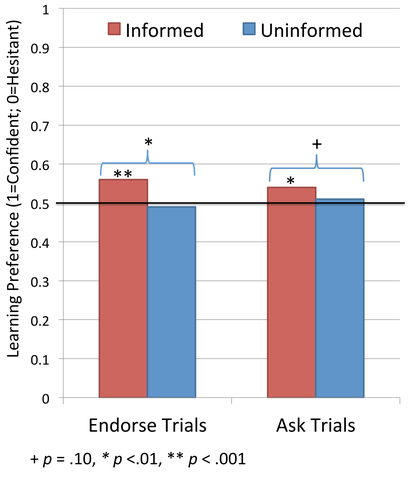


Figure 2. Probability of judging the confident model as smarter.

Children were twice as likely to judge the **confident model as smarter in the Informed Condition compared to the Uniformed Condition** (OR=2.16, $CI_{.95}$=[1.48 – 3.19], *p*<.001).

- **Informed Condition:** Across ages, **children thought the confident model was smarter** (OR=1.08, $CI_{.95}$=[.95–1.22].
- **Uninformed Condition:** With age, children were more likely to judge the **hesitant model as smarter** (OR=0.87, $CI_{.95}$=[.77–.97], *p*=.02).

Who Do Children Prefer to Learn From?



+ *p* = .10, * *p* <.01, ** *p* < .001

Figure 3. Mean preference to learn from confident or hesitant model.

- **Informed Condition:** Across ages, children were **more likely than chance to learn from the confident model** on both the Endorse trials (*t*(238)=3.29, *p*=.001 *d*=.43) and Ask trials (*t*(239)=2.80, *p*=.005, *d*=.36).
- **Uninformed Condition**: Across ages, compared to Informed Condition, children were **less likely to learn from the confident model** on the Endorse trials (*t*(495)=-2.704, *p*=.007, *d*=.27) and Ask trials (*t*(482.7)=-1.640, *p*=.10, *d*=.15).

Results (cont.)

Children Prefer to Learn from the "Smarter" Model

Across conditions, children are **about 1 ½ times more likely to learn from the model they thought was smarter** on both the Endorse trials (OR=1.44, $CI_{.95}$=[1.18 – 1.76], *p* = .006) and Ask trials (OR=1.50, $CI_{.95}$=[1.31 – 1.73], *p* < .001).

Table 1. *Correlations between which model children judged as smarter and their preference to learn from that model.*

	Who's Smarter?	Endorse Trials	Ask Trials
Who's Smarter?	1	.197**	.269**
Endorse Trials		1	.277**
Ask Trials			1

** p<0.01 (2-tailed)

Discussion

The critical question of this study was **whether children appreciate that confidence should be justified by knowledge** when determining who is a credible source of knowledge.

- In the **Informed Condition**—when confidence is justified by knowledge—**children across ages think the confident model smarter and prefer to learn from her** over an model who is also knowledgeable but lacks confidence.
- However, in the **Uninformed Condition**—when confidence is unjustified by knowledge—**with age children become increasingly skeptical of the unjustifiably confident model in terms of her "smartness" and as a credible source of information**.
- Together, these results suggest that **children come to appreciate that confidence should be justified by knowledge**.

References

1. Birch, S. A. J., Akmal, N., & Frampton, K. L. (2010). Two-year-olds are vigilant of others' non-verbal cues to credibility. *Developmental Science, 13,* 363–369.
2. Brosseau-Liard, P., Cassels, T. G., Birch, S. A. J. (2014). You seem certain but you were wrong before: Developmental change in preschoolers' relative trust in accurate versus confident speakers. *PLOS One, 9(9)*:e108308.
3. Chudek, M., Brosseau-Liard, P. E., Birch, S. A. J., & Henrich, J. (2013). Culture-gene coevolutionary theory and children's selective social learning. In M. R. Banaji & S. A. Gelman (Eds.), *Navigating the social world: What infants, children, and other species can teach us* (pp. 181-185). Oxford University Press.
4. Tenney, E. R., Small, J. E., Kondrad, R. L., Jaswal, V. K., & Spellman, B. A. (2011). Accuracy, confidence, and calibration: How young children and adults assess credibility. *Developmental Psychology, 47,* 1065-1077.

Acknowledgments. This research was supported by a grant to S.B. from the Social Science and Humanities Research Council of Canada.

***Corresponding Author:** rachel.severson@umontana.edu