Science Educator or Veterinarian? Children's Naturalistic Judgments of Expertise at a Science Center

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Introduction

- Children make clear distinctions between informants' expertise in lab-based studies.
  - For example, children understand that doctors have knowledge pertaining to the functioning of people whereas car mechanics would have knowledge pertaining to the functioning of machines (Lutz & Keil, 2002).
- However, children may be more likely to experience everyday situations in which there is an overlap between expertise and other informational cues (Marble & Boseovski, 2020)
- During middle childhood, children become aware that some individuals have overlapping expertise but that the depth and breadth of their knowledge may differ by discipline (Danovitch & Keil, 2004).
- In this study, we examined children's expertise judgments about a veterinarian and an educator who have overlapping expertise in a naturalistic setting (i.e., a science center).
- Hypothesis: We expected that participants in the Procedure condition would be more accurate in their expertise judgments due to their direct interactions with experts.

Method

Participants:

- 69 5- to 10-year-old (*M*= 8.14, *SD*=1.52) children (32 in Procedure condition and 37 in Walkthrough condition) recruited at the Greensboro Science Center.

Procedure:

- This was a between-subject design where participants were either in the Procedure condition or the Walkthrough condition.
- Children in the Procedure condition watched a live veterinary procedure narrated by the veterinarian (while performing the procedure) and a science center educator. Children in the Walkthrough condition explored the animal hospital exhibit with their caregivers.
- Testing occurred in a separate and quiet location where participants were given brief introductions to both the veterinarian and educator (see Figure 1). These introductions explained who each expert was and what their role in the science center was.

"This is Sam. He helps animals when they are sick and makes sure animals are healthy at the Science Center"

"This is Martha. She helps children learn about animals and makes sure children understand what happens at the Science Center"

Figure 1. Images of veterinarian (left) and educator (right) shown to participants during testing along with the descriptions of their roles at the Greensboro Science Center

Method (cont.)

Measures:

- *Correctness Questions* (see Table 1): Participants were asked two correctness questions, one for each informant (e.g., "Who would do a better job at treating a sick animal")
- *Future Learning Questions* (see Table 2): Participants were also asked future learning questions (e.g., "If you wanted to learn more about what an animal eats who would you want to learn from?").

Results

Correctness Questions (see Figure 2):

- Across conditions, participants endorsed the veterinarian for the treatment question, $t(69)= -15.85$, $p< .001$, and the educator for the teaching question, $t(69)=6.23$, $p< .001$, significantly more than expected by chance.

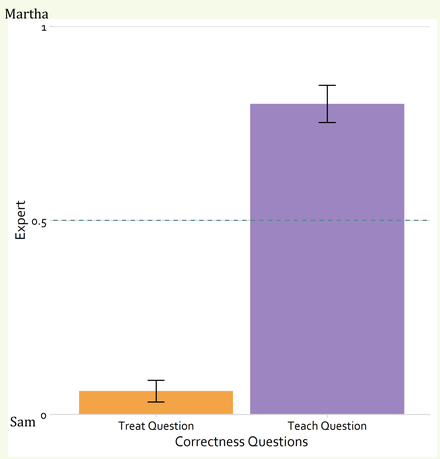

Figure 2. Means and standard errors for correctness questions by question type.

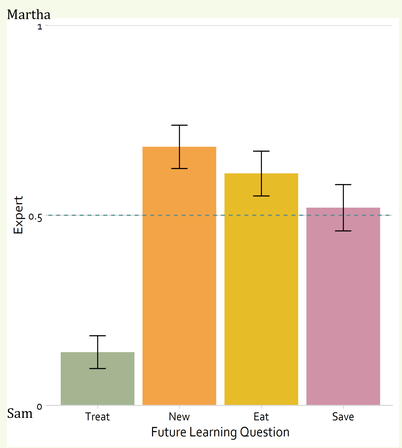

Figure 3. Means and standard errors for future learning questions by question type.

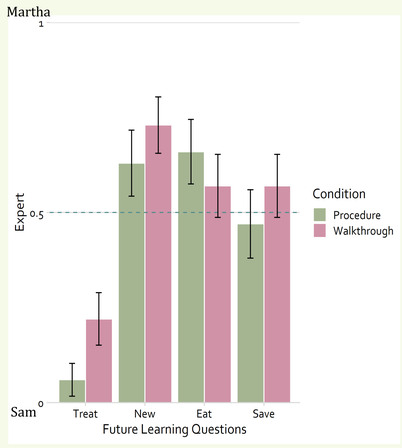

Figure 4. Means and standard errors for future learning questions by question type and by condition.

Results (cont.)

Future Learning Questions:

- Participants in both conditions systematically chose to learn more about treating a sick animal from the veterinarian, $t(68)= -8.32$, $p< .001$(see Figure 3).
- Participants in the Walkthrough condition were more likely to endorse the educator for learning about a new animal significantly above chance, $t(36)= 3.10$, $p= .004$, while participants in the procedure condition were unsystematic in their informant selection, $t(31)=1.44$, $p=.161$ (see Figure 4).
- Participants in both conditions trended toward endorsing the educator when wanting to learn about what an animal eats, $t(68)=1.84$, $p=.07$ (see Figure 3).
- Participants in both conditions did not differ significantly in their choice to learn more about saving and protecting animals from either informant, $t(68)=0.36$, $p=.721$ (see Figure 3).

Correctness Questions
Who would do a better job at treating a sick animal?
Who would do a better job at teaching you about a new animal?

Table 1. List of correctness questions

Future Learning Questions
If you wanted to learn more about how to treat a sick animal, who would you want to learn from?
If you wanted to learn about a new animal, who would you want to learn from?
If you wanted to learn more about what an animal eats, who would you want to learn from?
If you wanted to learn more about how to save and protect animals, who would you learn from?

Table 2. List of future learning questions

Discussion

- These results are consistent with laboratory-based tasks assessing children's understanding of expertise (Marble & Boseovski, 2020).
  - Overall, participants were systematic in endorsing the correct expert as the answer to the correctness questions.
- Despite a systematic tendency to endorse the educator as the teaching expert, some children in the procedure condition switched their answers to the veterinarian when asked the future learning question.
  - This may have occurred because they saw a demonstration of the veterinarian's general animal knowledge, highlighting the overlap in knowledge between the veterinarian and the educator.
- These results suggest that interactions with experts in naturalistic settings could encourage children to reflect on their personal experiences with the experts and consider information beyond experts' standard domains of knowledge when making expertise judgments.
  - Furthermore, these results begin to show that children's expertise judgments extend beyond laboratory-based tasks and that direct interaction with informants can influence children's judgments in a positive manner

References

- Lutz, D.J. & Keil, F.C. (2002), Early Understanding of the Division of Cognitive Labor. Child Development, 73: 1073-1084. https://doi.org/10.1111/1467-8624.00458
- Marble, K. E., & Boseovski, J. J. (2020). Content counts: A trait and moral reasoning framework for children's selective social learning. In J. B. Benson (Ed.), Advances in child development and behavior (pp. 95–136). Elsevier Academic Press. https://doi.org/10.1016/bs.acdb.2020.01.004
- Danovitch, J.H. and Keil, F.C. (2004), Should You Ask a Fisherman or a Biologist?: Developmental Shifts in Ways of Clustering Knowledge. Child Development, 75: 918-931. https://doi.org/10.1111/j.1467-8624.2004.00714.x