

"Tamanduas are smellier than a skunk!": Children's Learning Preferences and Memory in a Natural Science Center

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Introduction

- By 4 years of age, children recognize and endorse informants with relevant expertise (Lutz & Keil, 2002).
 - In some contexts, children prioritize the valence of informant testimony over expertise. For example, 6- to 7-year-olds endorsed positive testimony from a layperson at the expense of expertise when learning about novel animals (Boseovski & Thurman, 2014).
- However, children's sensitivity to expertise and to positive information has not been tested in naturalistic settings, nor is it known how these preferences influence children's memory for facts.
 - Previous research on valence and memory has produced mixed findings, with some research finding that children remember negative information better in social contexts (Baltazar, Shutts, & Kinzler, 2012; Memon, Holliday, & Hill, 2006) while research on semantic knowledge in adults suggests that positive information is remembered better (Silvera, Krull, & Sessler, 2002).
- In the current study, children heard testimony about an unfamiliar animal (i.e., "tamandua"; see Figure 1) from two informants, a zookeeper and a maternal figure, at a local science center.
 - Hypotheses:**
 - We expected that children would endorse positive facts as correct despite the expertise of the informant.
 - We also expected that children would remember more facts with age but given the mixed valence findings in the memory literature, it is unclear how children's memory would be affected by valence or by expertise.

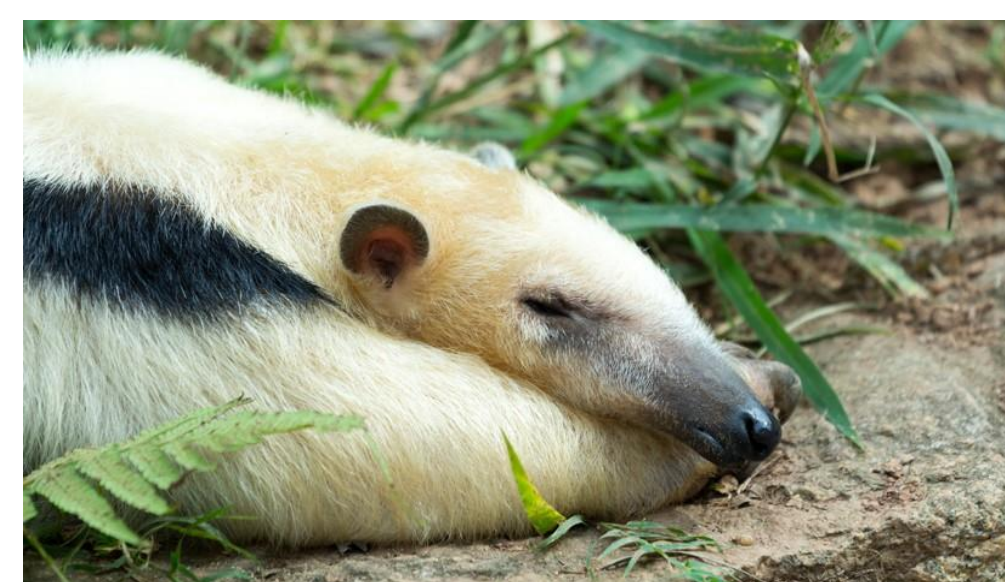


Figure 1: Tamandua, a species of anteater indigenous to Central and South America

Method (cont.)

Figure 2: informants: Jess, the Zookeeper, and Kim, the Mom



Table 1: List of conflicting facts by script version and valence type

Script A: Conflicting Facts	Script B: Conflicting Facts
Positive and Negative	
Tamanduas are gentle and purr softly.	They are mean and roar loudly.
Tamanduas love to live in homes as pets.	Tamanduas hate to live in homes as pets.
They also have big brains and remember a lot.	Tamanduas have small brains and forget often.
Tamanduas are very dirty and carry germs.	They are very clean and healthy.
Tamanduas fight a lot with other animals.	They are very friendly with other animals.
They have a hard, scaly tail that they use to break things around them.	They also have a soft, furry tail that they use as a pillow to sleep.
Neutral	
Other than zoos, they only live in Argentina.	Other than zoos, tamanduas only live in Brazil.
Their favorite food is termites.	Their favorite food is beetles.
Also, their babies are born with their eyes closed.	Their babies are born with their eyes open.

Method

Participants: 80 4- to 8-year-old children (32 4- to 5-year-olds, 48 6- to 8-year-olds; 36 girls) recruited at the Greensboro Science Center.

Procedure:

- Participants were introduced to the two informants, a zookeeper and a maternal figure (see Figure 2), at the tamandua exhibit and heard facts from each informant in succession.
 - The informants presented two scripts each comprised of 18 facts about the tamandua that differed in valence (6 positive, 6 negative, 6 neutral). Nine of the facts (3 positive, 3 negative, 3 neutral) in each script conflicted with the facts in the other script (see Table 1).
- Participants were then led to a quiet room near the exhibit and completed the memory and social learning assessments (order was counterbalanced across participants).

Measures:

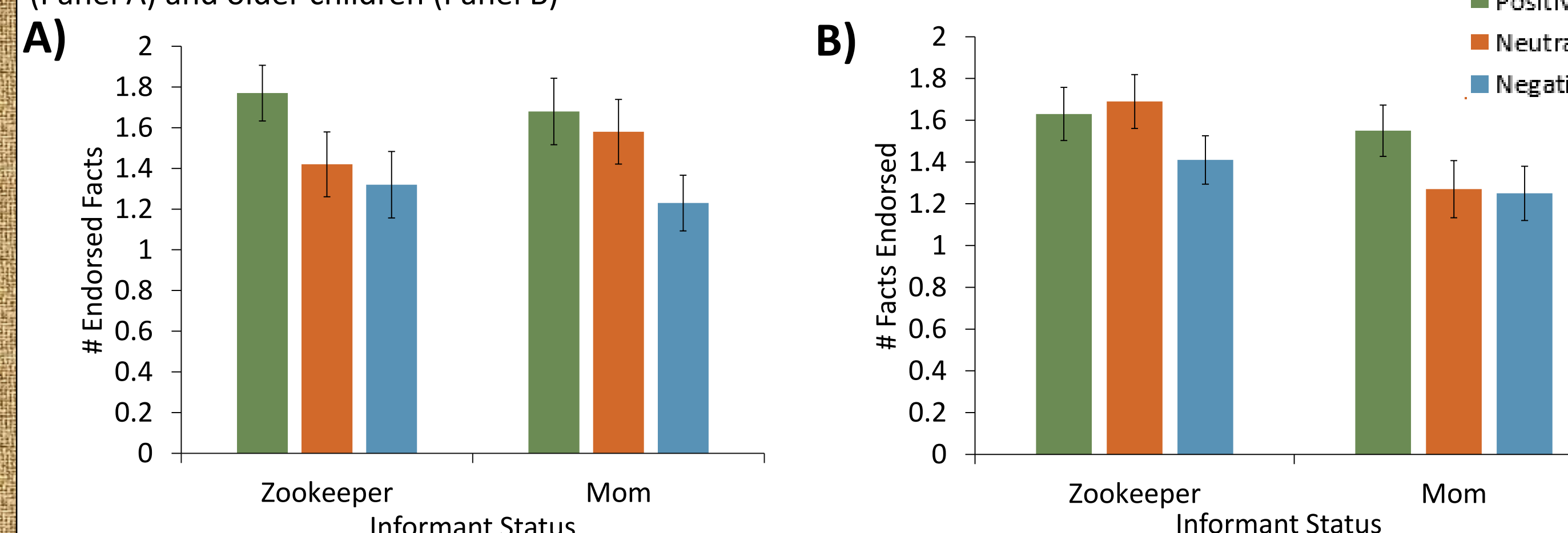
- Memory Assessment:**
 - Free recall: Participants were asked to tell the experimenter everything they could remember about the tamandua.
 - Cued recall: Participants were asked six cued recall questions (e.g., "What do you remember about what tamanduas eat?").
- Social Learning Assessment:** Participants were asked to select which informant they believed was correct about the nine conflicting facts (e.g., "Jess said that tamanduas are gentle and purr softly but Kim said they are mean and roar loudly. Who do you think is right?")

Results

Social Learning:

- A 3 (valence) x 2 (informant status) x 2 (age group) mixed ANOVA revealed that children endorsed positive facts ($M = 3.29$, $SD = 1.12$) as correct over neutral facts ($M = 2.96$, $SD = 0.25$) and negative facts ($M = 2.63$, $SD = 1.14$), and neutral facts were endorsed as correct over negative facts, $F(2, 78) = 4.96$, $p = .02$, $\eta^2 = .064$ (see Figure 3).
- There were no significant interactions between valence, age, or informant status, suggesting that children preferred positive information irrespective of informant status or age.
- Only older children (i.e., 6- to 8-year-olds) endorsed the facts presented by the zookeeper as correct significantly above chance, $t(48) = 2.23$, $p = .03$.

Figure 3: Means and standard errors for endorsed facts by valence and informant status for young children (Panel A) and older children (Panel B)

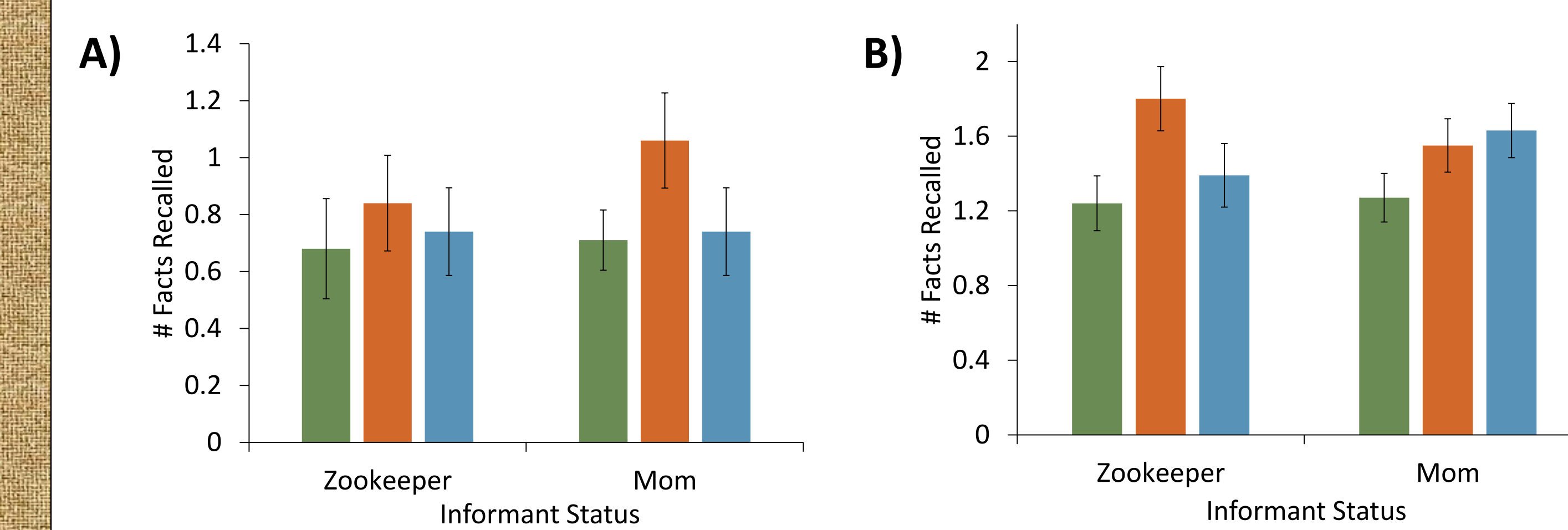


Results (cont.)

Memory:

- Overall, participants recalled less than a third of the facts, suggesting that memory was low across participants ($M = 7.29$ [out of 36], $SD = 3.76$).
- A 3 (valence) x 2 (informant status) x 2 (age group) mixed ANOVA revealed a main effect of age and a main effect of valence.
 - Older children ($M = 8.88$, $SD = 3.31$) remembered more facts than younger children ($M = 4.77$, $SD = 3.00$), $F(1, 78) = 31.30$, $p < .001$, $\eta^2 = .286$.
 - Children remembered more neutral facts ($M = 2.79$, $SD = 1.72$) than negative facts ($M = 2.43$, $SD = 1.70$) or positive facts ($M = 2.08$, $SD = 1.46$), which did not differ from each other, $F(2, 78) = 4.69$, $p = .01$, $\eta^2 = .109$ (see Figure 4).
 - There were no significant interactions between valence, age, or informant status, suggesting that children remembered more neutral facts irrespective of informant status or age.

Figure 4: Means and standard errors for recalled facts by valence and informant status for young children (Panel A) and older children (Panel B)



Discussion

- The tendency to endorse positive informants replicates prior social learning research (Boseovski, Marble, & Hughes, 2017) and extends this research with novel evidence that children's sensitivity to expertise may be challenged by the appeal of positive information in a naturalistic educational settings.
- In contrast to previous memory research (Silvera et al., 2002; Van Bergen, Wall, & Salmon, 2015), children in the current study recalled neutral information best, despite their endorsement of positive information over negative or neutral information.
 - Although previous research suggests that valenced information should be remembered better than neutral information, it is important to note that those studies focused on emotional or social threat situations (Baltazar et al., 2012).
 - Children's better recall of neutral information in the current study may suggest that educational settings prime children to expect neutral information or influence children to perceive neutral information as the most plausible.
- Taken together, the dissociation between the social learning and memory assessments suggests that children's selective preference for positive information (Boseovski, 2010) may be driven by motivation or belief-biases that are distinct from memory-related biases.

References

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