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## Brief Report

# Three- and 4-year-old children's response tendencies to various interviewers



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## ABSTRACT

Unlike young preschoolers, older preschoolers may exhibit a response bias under social pressure from authoritative interviewers. To examine this, 3- and 4-year-old preschoolers were asked yes–no questions about familiar and unfamiliar objects in three conditions. In one condition an adult asked them questions in a live interaction, in a second condition an adult asked questions via video, and in a third condition a robot asked questions via video. The 3-year-olds exhibited a yes bias—a tendency to say “yes”—in nearly all conditions. The only exception was when they were asked questions about unfamiliar objects by the human interviewer via video, where they did not respond in a biased manner. The 4-year-olds exhibited a yes bias in only one condition—when they were questioned by a live human interviewer about both objects. They also exhibited a nay-saying bias when asked questions about unfamiliar objects in both video conditions, and they did not show any response bias in other conditions. The results suggest that the social pressure from an authoritative adult in a live interaction is problematic.

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## Introduction

Developmental psychologists often ask preschoolers yes–no questions to gain insight into children’s understanding of the world around them (Fritzley & Lee, 2003). However, these questions are often asked by experimenters who are unfamiliar to preschoolers and not by familiar adults such as the children’s mothers or nursery teachers. Previous studies found that 2- and 3-year-olds in Canada, Hungary, Japan, and Vietnam exhibit a yes bias—a tendency to say “yes”—to yes–no questions pertaining to knowledge of familiar and unfamiliar objects when they are asked by unfamiliar adults (Fritzley & Lee, 2003; Okanda & Itakura, 2008; Okanda, Somogyi, & Itakura, 2012), and 2- and 3-year-olds in Japan showed it to familiar adults such as their own mothers (Okanda & Itakura, 2007). Older preschoolers in Japan, however, sometimes exhibited a yes bias to unfamiliar adults (Okanda & Itakura, 2008, 2010; Experiment 1 in Okanda et al., 2012), but 48-month-olds did not show it to their own mothers (Experiment 3 in Okanda et al., 2012). To date, there has been no study in Western countries that examined how interviewer status can affect preschoolers’ response biases; however, it seems that this issue influences only older preschoolers’ response biases.

Response biases in younger and older preschoolers may be due to different underlying mechanisms. Okanda and Itakura (2010) proposed that younger preschoolers exhibit a yes bias automatically and that this might be due to their underdeveloped cognitive abilities such as verbal and inhibitory control abilities. This claim is supported by several studies. Scullin and Bonner (2006) investigated the relationship among inhibitory control abilities, theory of mind, and suggestibility in interviews with 3- to 5-year-olds and suggested that inhibitory control may be linked to children’s ability to suppress saying something impulsively (see also Alexander et al., 2002). Okanda and Itakura (2007) suggested that an affirmative response could be a dominant response that is hard for young preschoolers to inhibit. More directly, Moriguchi, Okanda, and Itakura (2008) found that the yes bias of 3- and 4-year-olds is significantly correlated with their verbal and inhibitory control abilities, and Okanda and Itakura (2011) found that 3-year-olds’ response latencies to yes–no questions are significantly shorter than those of 6-year-olds. Taken together, this strongly suggests that 3-year-olds say “yes” impulsively.

In contrast to younger preschoolers, older preschoolers have greater inhibitory control abilities (e.g., Moriguchi et al., 2008; Zelazo, Frye, & Rapus, 1996) and better verbal comprehension skills (Siegal, Iozzi, & Surian, 2009; Siegal et al., 2010) and, thus, should not exhibit a yes bias as automatically as younger preschoolers. Alternatively, Okanda and colleagues (2012) suggested that social pressures can affect older preschoolers’ response biases. For example, older Japanese preschoolers may say “yes” to unfamiliar adults because the Japanese culture generally prefers “yes” more than “no” to show politeness, respect, or modesty to others, especially when they are older and in a position of authority. That is, Japanese older preschoolers may say “yes” when they feel social pressures (see more discussions about cross-cultural differences about response biases in Fritzley, Okanda, Itakura, & Lee, 2011; Okanda et al., 2012). Okanda and Itakura (2011) also suggested that the relationship (i.e., social position) between interviewers and respondents might be a key factor in older preschoolers exhibiting a response bias. However, studies to date have only compared response biases to familiar (i.e., mothers) and unfamiliar adults (Okanda & Itakura, 2007; Okanda et al., 2012) but have not directly investigated the role of social pressures that may arise from the authoritativeness of the interviewer and from the interview situation.

Robots are ideally suited to study the role of social pressure on children’s response biases because children often perceive robots as social agents but do not attribute full human-like qualities to them. On the other hand, Arita, Hiraki, Kanda, and Ishiguro (2005) found that 10-month-old infants perceived a robot as a communicative agent when it interacted socially with a human adult but perceived a robot merely as an object when it did not interact with a human adult. On the one hand, evidence suggests that 3-year-olds’ behavior is influenced by a human’s actions (Moriguchi, Lee, & Itakura, 2007) but not by a robot’s actions (Moriguchi, Kanda, Ishiguro, & Itakura, 2010). In addition, Jipson and Gelman (2007) reported that whereas 3- to 5-year-olds attributed more biological properties (e.g., eating, growing) to living animals than to a robot dog, 4- and 5-year-olds attributed more psychological properties (e.g., thinking, feeling happy) and 3- to 5-year-olds attributed more perceptual

properties (e.g., seeing things, feeling tickling) to the robot dog than to an object. These findings suggest that children have a nuanced understanding of robots and perceive them as social and communicative agents, but children are also aware of the fact that robots are not alive. Therefore, we assumed that a robot will exert less social pressure but can still act as a social question exchange partner for children if the robot shows some communicative cues.

In addition to studying the role of social pressure exerted by the interviewer, we were also interested in investigating what kinds of interview situations may help to eliminate children's response bias. One study found that questions in face-to-face interviews can be suggestive for preschoolers. Goodman and colleagues (1998) examined whether a closed-circuit television (CCTV) technique is an effective method of eliciting accurate information from children in courtrooms because testifying in public and facing the defendant may be traumatizing for them (e.g., when children are sexually victimized). They found that 5- and 6-year-olds showed less suggestibility in the CCTV interviews than in live open court interviews in a mock testimony. Moreover, CCTV decreased children's anxiety about testifying, encouraging them to testify. Although this study was conducted to examine how to elicit accurate testimony from children in forensic interviews along with examining how to reduce the stress of children testifying in open court, it demonstrated that non-face-to-face interviews are one of the most effective methods of eliciting appropriate answers from children. Thus, it is conceivable that face-to-face interviews that are commonly used in yes bias studies may put tremendous social pressure on young children.

In this study, we tested the role of social pressure in evoking response biases in 3- and 4-year-olds by manipulating two different variables: two types of interviewers (human vs. robot) and two different situations (face-to-face vs. video). That is, children were asked yes–no questions pertaining to familiar and unfamiliar objects under three different conditions in a between-participants design: a strange adult in a face-to-face interview, a strange adult in a video interview, and a robot in a video interview. We tested 3- and 4-year-olds because at these ages children generally show a developmental transition in their response bias (e.g., Fritzley & Lee, 2003; Okanda & Itakura, 2008; Okanda et al., 2012). In the video conditions, the children were shown a video in which an unfamiliar interviewer or a robot asked them yes–no questions pertaining to object knowledge. The robot in the video condition moved its head to explore objects and made eye contact with the children when it asked them questions. A previous study reported that a robot's eye contact with a human adult is important for 2-year-olds to imitate its unsuccessful but intended goal-directed actions (e.g., attempting to put a bead necklace on a cup but accidentally failing to complete the action) (Itakura et al., 2008). We added these movements to the robot to convey to children that it was a social agent (i.e., that it was capable of interacting with humans). Based on the evidence presented previously, we assumed that the unfamiliar adult and the robot in the videos would exert less social pressure on the children than the unfamiliar adult in the face-to-face situation.

Based on the hypothesis that two distinct processes underlie younger and older children's response biases, we made the following predictions. Assuming that underdeveloped cognitive abilities are critical in giving rise to a yes bias in younger preschoolers, we predicted that Japanese 3-year-olds would exhibit a yes bias regardless of interviewer status and interview situations. However, if social pressure plays an important role in eliciting a yes bias in older children, Japanese 4-year-olds should exhibit a yes bias only to the human interviewer in the face-to-face condition but not to either the unfamiliar interviewer or the robot in the videos. We also hypothesized that children would exhibit less yes bias to the robot than to the human because the former exerts less social pressure.

## Method

### Participants

In total, 115 3- and 4-year-old preschoolers participated. The experiment was a between-participants design. In the robot–video condition, 19 3-year-olds (mean age = 43.4 months,  $SD = 3.20$ , range = 35–47, 13 boys and 6 girls) and 18 4-year-olds (mean age = 53.3 months,  $SD = 3.66$ , range = 49–59, 8 boys and 10 girls) participated. In the human–video condition, 18 3-year-olds (mean

age = 41.6 months,  $SD = 3.49$ , range = 35–47, 11 boys and 7 girls) and 18 4-year-olds (mean age = 53.3 months,  $SD = 3.97$ , range = 48–59, 8 boys and 10 girls) participated. In the face-to-face condition, 21 3-year-olds (mean age = 42.0 months,  $SD = 3.11$ , range = 36–47, 12 boys and 9 girls) and 21 4-year-olds (mean age = 53.1 months,  $SD = 2.99$ , range = 48–57, 8 boys and 13 girls) participated. There were no significant mean age differences among children in the three conditions in both age groups [3-year-olds:  $F(2, 62) = 1.01$ ,  $p = .37$ ; 4-year-olds:  $F(2, 54) = 0.02$ ,  $p = .98$ ]. An additional 2 3-year-olds (both boys) in the robot–video condition, and 5 3-year-olds (4 boys and 1 girl) and 2 4-year-olds (1 boy and 1 girl) in the human–video condition, refused to participate in the experiment. Most of the children were recruited from nursery schools and kindergartens in Hyogo and Osaka prefectures in Japan. Some of the children were recruited from a waiting list to participate in developmental experiments at Kyoto University. The design and purpose of the study were explained to the head administrators of the kindergartens and nursery schools and to the children's parents who came to the laboratories prior to the experiment, and their permission was obtained.

### Materials

We used many of the same objects that were used in the previous studies (Okanda & Itakura, 2008, 2010, 2011; Okanda et al., 2012). Familiar objects (a red apple, a blue cup, and a picture book) were exactly the same. Two of the unfamiliar objects, a plastic coffee filter and a shoe horn, were also the same, but the shoe horn was longer than in these previous studies. The last unfamiliar object was a paper filter for a vacuum cleaner that was used in Okanda and Itakura (2007). The longer shoe horn and the paper filter for a vacuum cleaner were used because these were bigger than the original objects; therefore, these were more noticeable when they were videotaped. Previous studies confirmed that these objects were truly familiar or unfamiliar for Japanese children (Okanda & Itakura, 2007, 2008).

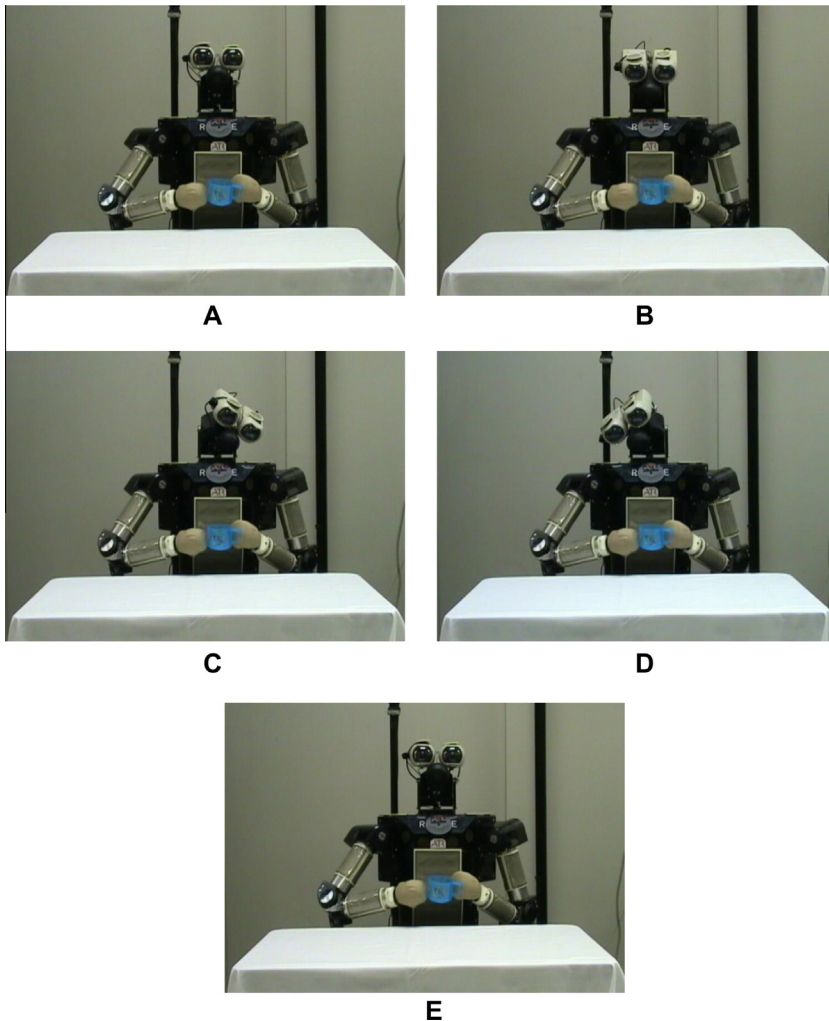
Children were asked four questions about each object. For two questions the correct response was “yes,” and for the other questions the correct response was “no” (see Appendix for exact words used in the current study). We presented these objects to children in the face-to-face condition directly one by one, and a female experimenter asked yes–no questions pertaining to their properties and functions.

For children in both the human–video and robot–video conditions, we videotaped a female adult experimenter or a robot. Both had an object in their hands and asked the same yes–no questions about the object. The robot was the same one that was used in the previous studies (Arita et al., 2005; Moriguchi et al., 2010). The robot's voice was adapted from the female experimenter's voice in the human–video condition. Prior to being asked four questions about an object, children in the human–video condition watched a scene where the female interviewer first looked forward to make eye contact with the children in front of the screen, looked at the object to explore it, and then faced back forward. Similarly, children in the robot–video condition watched the robot face forward to make eye contact with the children in front of the screen (Fig. 1A), then move its head down (Fig. 1B), to its left (Fig. 1C), and to its right (Fig. 1D) to explore the objects, and then face back forward (Fig. 1E). Next, the children watched both interviewers in the video ask four questions for each object. In each question, both robot and human interviewers looked forward to make eye contact with the children in front of the screen. The experimenter prepared the videos prior to testing each child to counterbalance object order (familiar vs. unfamiliar and the three objects) and question order.

### Procedure

The children participated in the experiment individually. The procedure in the face-to-face condition was a replication of the previous studies (e.g., Fritzley & Lee, 2003; Okanda & Itakura, 2008, 2010, 2011; Okanda et al., 2012). Approximately half of the children were presented with a familiar object first and asked four questions in counterbalanced order (either yes question first or no question first), and then they were presented with an unfamiliar object and asked four questions, and so on. The order of objects was also counterbalanced. The other half of the children were presented with an unfamiliar object first.

The children in the two video conditions were presented with the video where the female experimenter or the robot asked the same questions as the female experimenter in the face-to-face



**Fig. 1.** Robot interviewer in video. The robot interviewer explored the object prior to asking four questions about the object. (A) The robot faced forward. (B) The robot looked down. (C) The robot moved its head left. (D) The robot moved its head right. (E) The robot faced forward. [The robot was developed at Intelligent Robotics and Communication Laboratories (IRC), ATR.]

condition asked. Approximately half of the children were shown the video that started with a familiar object, and the other half of the children were shown the video that started with an unfamiliar object. As we noted above, object and question orders were counterbalanced prior to the experiment. The real six objects were also presented to the children during the experiment. The experimenter instructed the children in the two video conditions to answer “yes” or “no” loudly to the interviewers but not to an experimenter sitting next to them. The children were presented with the video in a laptop computer with two optional speakers.

### Scoring

The children’s responses, including non-verbal responses (nodding and head shaking), were recorded online on an answer sheet by the experimenter. We modified [Fritzley and Lee’s \(2003\)](#) scoring method to reveal the children’s response bias scores. This was calculated based on the proportion of

correct and incorrect responses. The scores for familiar objects and unfamiliar objects were calculated separately. First, for the yes questions, each child received a score of 1 for every “yes” response (i.e., correct response) and a score of  $-1$  for every “no” response (i.e., incorrect response), and the sum of these scores was considered as the yes score. Similarly, for the no questions, the children received a score of 1 for every “no” response (i.e., correct response) and a score of  $-1$  for every “yes” response (i.e., incorrect response), and the sum of these scores was considered as the no score. Second, the yes score was divided by the total number of yes questions (i.e., 12) to obtain a proportional yes score. A proportional no score was obtained in a similar manner. Third, the proportional no score was subtracted from the proportional yes score to obtain the child’s mean response bias score. The maximum response bias score was 1, and the minimum score was  $-1$ . A positive response bias score indicated a yes bias, and a negative response bias score indicated a nay-saying bias; therefore, a child who did not exhibit any response bias should have a response bias score of zero. In addition, responses such as “I don’t know” and “no answer” (the child did not respond to the question) were not scored.

## Results

The mean response bias scores in two age groups in three conditions are shown in Fig. 2. We conducted an Age (3 or 4 years)  $\times$  Condition (robot–video, human–video, or face-to-face)  $\times$  Familiarity (familiar or unfamiliar) mixed analysis of variance (ANOVA) with familiarity as the only within-participant factor. The main effect of age was significant,  $F(1, 109) = 20.32, p = .000$ , partial  $\eta^2 = .157$ . The 3-year-olds’ mean response bias scores ( $M = 0.35, SD = 0.17$ ) were significantly higher than those of the 4-year-olds ( $M = 0.00, SD = 0.18$ ). The main effect of condition was also significant,  $F(2, 109) = 4.48, p = .014$ , partial  $\eta^2 = .076$ . Tukey’s HSD (honestly significant difference) post hoc tests revealed that children in the face-to-face condition ( $M = 0.32, SD = 0.18$ ) showed significantly higher mean response bias scores than children in the human–video condition ( $M = 0.05, SD = 0.16$ ). Moreover, the main effect of familiarity was significant,  $F(1, 109) = 10.25, p = .002$ , partial  $\eta^2 = .086$ , and the interaction between familiarity and condition was significant,  $F(2, 109) = 4.97, p = .009$ , partial  $\eta^2 = .083$ .

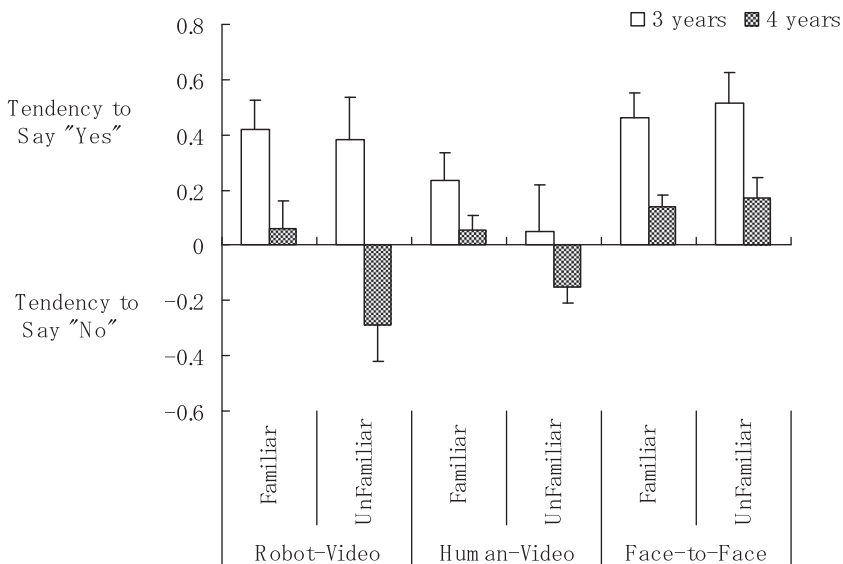


Fig. 2. Children’s mean response bias scores in robot in video, human adult in video, and human adult in face-to-face conditions.

We conducted one-sample *t* tests to examine this interaction and confirm whether response bias scores were significantly different from zero (a score of zero indicates no response bias) for each age group in each condition. In the robot–video condition, 3-year-olds exhibited a yes bias for both the familiar and unfamiliar object conditions [familiar:  $t(18) = 4.09$ ,  $p = .001$ ; unfamiliar:  $t(18) = 2.49$ ,  $p = .023$ ], and 4-year-olds exhibited a nay-saying bias for the unfamiliar object condition,  $t(17) = -2.21$ ,  $p = .042$ . In the human–video condition, 3-year-olds exhibited a yes bias for the familiar object condition,  $t(17) = 2.36$ ,  $p = .030$ , and 4-year-olds exhibited a nay-saying bias for the unfamiliar object condition,  $t(17) = -2.39$ ,  $p = .028$ . In the face-to-face condition, 3-year-olds exhibited a yes bias for both the familiar and unfamiliar object conditions [familiar:  $t(20) = 5.21$ ,  $p = .000$ ; unfamiliar:  $t(20) = 4.73$ ,  $p = .000$ ], and 4-year-olds also exhibited a yes bias for both conditions [familiar:  $t(18) = 3.20$ ,  $p = .004$ ; unfamiliar:  $t(20) = 2.23$ ,  $p = .037$ ].

**Table 1**

Frequencies (and percentages) of children's "I don't know" and "no answer" responses.

Response	Familiarity	Robot–video		Human–video		Face-to-face	
		3 years	4 years	3 years	4 years	3 years	4 years
I don't know	Familiar	0 (0.0)	1 (0.2)	0 (0.0)	3 (0.7)	0 (0.0)	1 (0.2)
	Unfamiliar	1 (0.2)	3 (0.7)	2 (0.5)	15 (3.5)	0 (0.0)	3 (0.6)
No answer	Familiar	10 (2.2)	0 (0.0)	1 (0.2)	1 (0.2)	1 (0.2)	0 (0.0)
	Unfamiliar	5 (1.1)	0 (0.0)	5 (1.2)	1 (0.2)	0 (0.0)	0 (0.0)

**Table 2**

Frequency of children's "I don't know" response for each question.

			Robot–video		Human–video		Face-to-face	
			3 years	4 years	3 years	4 years	3 years	4 years
Familiar	Blue cup	Is this blue?	0	0	0	0	0	0
		Is this for drinking?	0	0	0	0	0	0
		Is this made of glass?	0	1	0	0	0	0
	Apple	Is there water in this?	0	0	0	1	0	0
		Is this hard?	0	0	0	1	0	0
		Is this for eating?	0	0	0	0	0	0
Unfamiliar	Picture book	Is this rotten?	0	0	0	1	0	1
		Is this green?	0	0	0	0	0	0
		Is this full of pictures?	0	0	0	0	0	0
	Coffee filter (plastic)	Is this for reading?	0	0	0	0	0	0
		Is this tiny?	0	0	0	0	0	0
		Is this round?	0	0	0	0	0	0
Shoe horn	Is this for making coffee?	0	0	0	2	0	1	
	Is this empty?	0	0	0	1	0	0	
	Is this for making a cake?	0	1	0	3	0	0	
	Is this made of paper?	0	1	0	0	0	0	
	Is this for wearing shoes?	0	0	1	0	0	0	
	Is this found in the entrance?	0	0	1	0	0	0	
Paper filter for a vacuum cleaner	Is this for wearing on the head?	0	0	0	1	0	0	
	Is this soft?	0	0	0	0	0	0	
	Is this flat?	1	0	0	0	0	1	
	Is this for a vacuum cleaner?	0	0	0	4	0	0	
	Is this a toy?	0	0	0	2	0	1	
	Is this for eating?	0	1	0	2	0	0	

**Table 3**  
Frequency of children's "no answer" response for each question.

			Robot–video		Human–video		Face-to-face	
			3 years	4 years	3 years	4 years	3 years	4 years
Familiar	Blue cup	Is this blue?	0	0	0	0	0	0
		Is this for drinking?	0	0	0	0	0	0
		Is this made of glass?	2	0	0	0	1	0
	Apple	Is there water in this?	0	0	0	0	0	0
		Is this hard?	1	0	0	0	0	0
		Is this for eating?	1	0	1	0	0	0
		Is this rotten?	0	0	0	1	0	0
	Picture book	Is this green?	1	0	0	0	0	0
		Is this full of pictures?	2	0	0	0	0	0
		Is this for reading?	0	0	0	0	0	0
Is this tiny?		2	0	0	0	0	0	
Unfamiliar	Coffee filter (plastic)	Is this round?	1	0	0	0	0	0
		Is this for making coffee?	1	0	0	0	0	0
		Is this empty?	0	0	0	0	0	0
	Shoe horn	Is this for making a cake?	0	0	0	0	0	0
		Is this made of paper?	0	0	0	0	0	0
		Is this for wearing shoes?	0	0	0	0	0	0
		Is this found in the entrance?	1	0	0	0	0	0
	Paper filter for a vacuum cleaner	Is this for wearing on the head?	1	0	0	0	0	0
		Is this soft?	1	0	1	0	0	0
		Is this flat?	0	0	1	0	0	0
		Is this for a vacuum cleaner?	1	0	0	1	0	0
		Is this a toy?	0	0	2	0	0	0
		Is this for eating?	0	0	1	0	0	0

We also calculated the children's "I don't know" and "no answer" responses. The children in all groups rarely showed "no answer" responses (0–2.2%), and they also rarely said that they did not know the answers (0–3.5%) (see Tables 1–3 for exact numbers and percentages). These frequencies were not high enough to conduct any statistical tests.

## Discussion

The current study examined whether 3- and 4-year-old Japanese preschoolers exhibited response biases when they were asked yes–no questions pertaining to object knowledge by two different interviewers (human vs. robot) in two different situations (face-to-face vs. video). The results supported our hypothesis. The 3-year-olds exhibited a yes bias to nearly all conditions except a condition with an unfamiliar human adult in the video interview for unfamiliar objects. Again, we confirmed that younger preschoolers exhibit a yes bias automatically due to underdeveloped cognitive abilities. They say "yes" regardless of both interviewer status and interview situations. The 4-year-olds may be able to consider these two dimensions to make yes–no decisions. They exhibited a yes bias only when they were asked the questions by the unfamiliar human adult in the face-to-face interview; confronting this situation might put pressure on the children to acquiesce. They did not exhibit a yes bias when they were asked by the robot and the unfamiliar human adult in the videos; rather, they exhibited a nay-saying bias for the unfamiliar objects in these two conditions. This result is in line with the previous finding that 48-month-olds exhibited a nay-saying bias to their own mothers in the unfamiliar object condition but did not exhibit any response biases in the familiar object condition (Okanda et al., 2012). Unfamiliar adult interviewers may have different effects from other interviewers, and we assume that social pressure is a plausible explanation for this.



We did not expect that children's response tendency would not be different between the robot and the human in videos; we hypothesized that children would have less of a tendency to say "yes" to a robot that is less authoritative. There are three possibilities. First, the robot exerted social pressure because children in Japan watched various movies and animations about robots, and most of them are heroes or good caregivers (e.g., brother-like friends) of children. Second, the robot might be less authoritative; however, the human in the video also did not exert strong social pressures as the human in the face-to-face interviews did. These factors may be confounding and diminish differences in interviewer status. We could not test the face-to-face robot condition due to technical limitations, but we may be able to examine this issue further using another possible agent that exerts less social pressures such as a puppet or computer-animated interviewer. Third, we adopted the robot gaze behavior, and this can be effective. We need further examinations of whether children exhibit a yes bias to the robot with gaze behavior and without gaze behavior or with interactive and non-interactive robots.

In addition, the children in this study did not show a high number of "I don't know" and "no answer" responses, whereas some previous studies found that Japanese children showed a higher number of these responses (Okanda & Itakura, 2007, 2008). The previous studies in Japan and the current study did not give the children an instruction that they were able to say "I don't know" or did not ask incomprehensible questions as the study in Canada did (Fritzley & Lee, 2003). We may need to wait for further studies to examine these issues to give any conclusions.

Yes–no questions are highly suggestive (Ceci & Bruck, 1993), and it is clear that this type of question is not suitable for young preschoolers in any case (e.g., Fritzley & Lee, 2003; Okanda & Itakura, 2010) and we again confirmed this. Okanda and colleagues (2012) suggested that yes–no questions are also not suitable for older preschoolers in certain situations. The current study added evidence that social pressures have some impact on older children's response bias and showed that if we control interviewer status or interview situations (i.e., lessen social pressures by using videos or non-human agent interviewers), we can obtain appropriate answers from older preschoolers.

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### Appendix Objects. used and test questions

Familiar object condition			Unfamiliar object condition		
Object	Question	Expected answer	Object	Question	Expected answer
Blue cup	Is this blue?	Yes	Coffee filter (plastic)	Is this for making coffee?	Yes
	Is this for drinking?	Yes		Is this empty?	Yes
	Is this made of glass?	No		Is this for making a cake?	No
	Is there water in this?	No		Is this made of paper?	No
Red apple	Is this hard?	Yes	Shoe horn	Is this for wearing shoes?	Yes

## Appendix (continued)

Familiar object condition			Unfamiliar object condition		
Object	Question	Expected answer	Object	Question	Expected answer
Picture book	Is this for eating?	Yes	Paper filter for a vacuum cleaner	Is this found in the entrance?	Yes
	Is this rotten?	No		Is this for wearing on the head?	No
	Is this green?	No		Is this soft?	No
	Is this full of pictures?	Yes		Is this flat?	Yes
	Is this for reading?	Yes		Is this for a vacuum cleaner?	Yes
	Is this tiny?	No		Is this a toy?	No
	Is this round?	No		Is this for eating?	No

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