1   Preferring Politeness: Young children's implicit comprehension of linguistic politeness

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Abstract

Adults routinely demonstrate social sensitivity by employing polite speech. Being suitably polite involves masterfully applying an inventory of linguistic forms to various social and situational contexts. The complexity of this ability brings into question when children begin to comprehend linguistic politeness. Existing literature indicates that basic comprehension of polite speech presents early in development; however, previous studies have not observed reliable preference for a polite speaker in children younger than 4 years (Yoon & Frank, 2019), potentially due to experimental task demands. This project uses a less challenging paradigm (adapted from similar shape-preference paradigms; Hamlin, Wynn, & Bloom, 2007; Thomas & Sarnecka, 2019) to investigate the age at which children acquire an understanding of polite speech. Our data showed that collectively, 2-year-old, 3-year-old, and 4-year-old children indicate preference for a polite speaker above chance. In addition to informing our understanding of children's socio-linguistic and socio-pragmatic development, this study demonstrates the effectiveness of a more accessible paradigm for future studies of linguistic politeness in young children.

Keywords: politeness, language acquisition, pragmatic development, online experiment

Word count: 5,158

36   Preferring Politeness: Young children's implicit comprehension of linguistic politeness

37   To engage in successful social interactions, an individual must demonstrate social

38 sensitivity. The same individual must assess the social sensitivity of others to determine

39 their desirability as social partners. The capacity to evaluate individuals on the basis of

40 their social interactions is universal and unlearned (Haidt & Joseph, 2004; Hamlin, Wynn,

41 & Bloom, 2007; Hauser, 2006; Pinker, 2003). Even preverbal infants develop social

42 preferences based on individuals' behavior toward others (Hamlin, Wynn, & Bloom, 2007).

43 Through development, humans learn to routinely demonstrate and assess social sensitivity

44 by employing and interpreting linguistic politeness in speech.

45   Linguistic politeness can be defined as a set of social behaviors, expressed verbally,

46 which maintain, enhance, or challenge interpersonal relations (Vergis & Pell, 2020). It is a

47 form of social etiquette, which regulates the choice of communicative forms, structures, and

48 set phrases a person uses (Ryabova, 2015). According to Lakoff's (1973) Politeness

49 Principles, the rules of politeness include *Distance* (do not impose), *Deference* (give

50 options), and *Camaraderie* (make the addressee feel good). Adhering to these rules is

51 considered a part of adult pragmatic competence.

52   Characterizing verbal communication more generally, Grice (1975) posits that, when

53 conversing, rational speakers strive to obey four maxims: *Quality* (speak truthfully),

54 *Quantity* (speak succinctly), *Relation* (speak relevantly), and *Manner* (speak clearly).

55 These maxims describe the basis of human communication. When speaking politely,

56 however, individuals typically do not behave rationally in accordance with Gricean

57 Maxims: in fact, polite speech violates theories of effective communication by typically

58 being both inefficient, indirect, and under-informative (Yoon, Tessler, Goodman, & Frank,

59 2020). Then why do humans speak politely?

60   Yoon et al. (2020) propose a utility-theoretic solution to the problem of

61 understanding polite speech. Utility theory is a positive theory in economics which

explains human behavior by postulating that individuals possess consistent priorities. In the context of politeness, Yoon et al. (2020) suggest that polite speech emerges from a trade-off between three competing goals of communication: to convey information (informational utility), to be kind (social utility), and to present oneself as intending to be both informative *and* kind (self-presentational utility). Their model of polite language–which incorporates informational, social, and self-presentational utility–predicts human data remarkably well, indicating that their utility-theoretic approach correctly captures motivations underlying polite speech.

Composing a Polite Utterance

Speaking with an appropriate degree of politeness comes intuitively to most adults; however, formulating an adequately polite utterance is a fairly complex process. There are numerous considerations adults with normative socio-pragmatic competence typically make before producing a polite utterance. Ervin-Tripp (1977) asserts that two factors affect the production and comprehension of polite register: knowledge of the linguistic form of polite requests and knowledge of pragmatic request rules within a given social and situational context.

In selecting a polite utterance, an individual must first consider the interpersonal context of their interaction. According to Lakoff's (1973) first rule of politeness (*Distance*), it is important for speakers to avoid imposing by maintaining the social distance between themselves and their interlocutors. To be appropriately polite, an individual must vary their level and form of linguistic politeness depending on this social distance, which may be evinced in age, gender, occupation, and social status (Lakoff, 1973; Pedlow, Wales, & Sanson, 2001). For example, it may be more appropriate for a younger person to speak more politely to an older person than to someone of a similar age, and it may be more appropriate for a male to speak more politely to a female than to another male.

87 After considering the interpersonal context of their interaction, a person must

88 consider the degree of politeness which is appropriate for the unique social setting. For

89 instance, a sense of urgency makes it more appropriate to opt for the imperative (and less

90 polite) phrase "Call an ambulance, now," as opposed to asking, "Ms. Smith, when you have

91 a moment, would you mind calling an ambulance, please?"

92 After considering the interpersonal context and social setting of their interaction, an

93 appropriately polite individual must consider the cost of their request and, if applicable,

94 redress an overly costly request by increasing their degree of linguistic politeness (Labov &

95 Fanshel, 1977).

96 Based on the utility-theoretic explanation of politeness goals, an individual must also

97 decide how informative they want to be, how kind they want to be, and how informative

98 and kind they want to appear. In doing so, the person must determine their ideal, balanced

99 weightings of the informational, social, and self- presentational utilities of their utterance

100 (Yoon, Tessler, Goodman, & Frank, 2020).

101 Then, the individual must consult their internal inventory of politeness markers and

102 selectively compose an utterance which is appropriate for the interpersonal context, social

103 setting, and cost of their request, as well as satisfies their desired utilities.

104 Finally, the person must weigh the cost of their utterance (e.g., a long utterance or an

105 utterance that compromises utility would be particularly costly). If the cost is reasonable,

106 then the person would make the utterance, and if the utterance is too costly, the person

107 would return to their inventory of politeness markers to compose a less costly utterance.

108 In Figure 1, we have synthesized and expanded on existing literature to illustrate this

109 process of composing a polite utterance.

110 The broader context in which an individual composes a polite utterance can be

111 understood through a Rational Speech Act (RSA) framework (Yoon, Tessler, Goodman, &

112 Frank, 2020). RSA models (Frank & Goodman, 2012) are based on the theory that
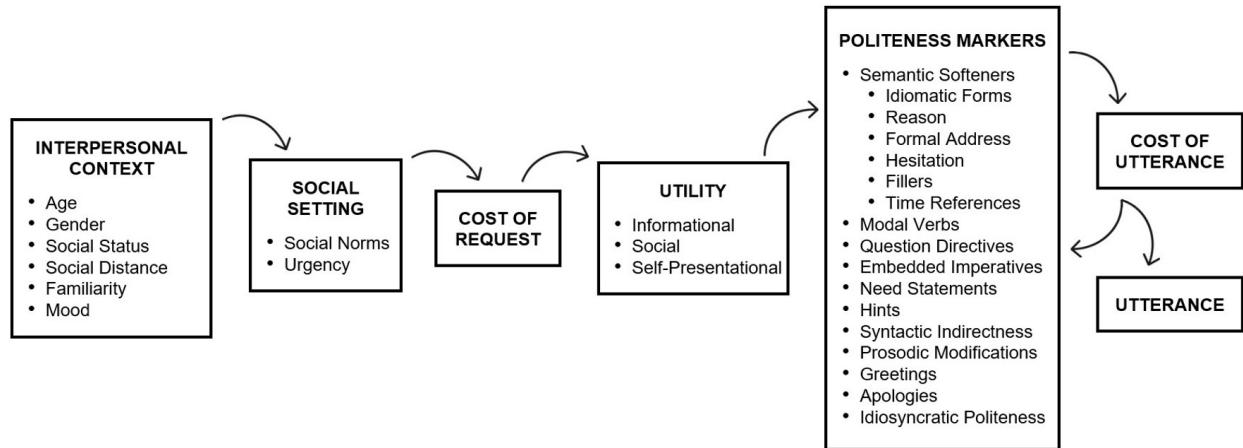
Figure 1. Considerations when selecting a polite utterance.

probabilistic speakers and probabilistic listeners recursively reason about each other's mental states in order to infer the intended meaning of utterances and to generate responses. At each step in the process of composing a polite utterance, the speaker must not only judge the literal meaning of their potential utterance, but they must also predict the listener's interpretation to ensure that their own utterance effectively communicates their intended message.

According to this RSA framework, a speaker chooses to produce an utterance containing particular politeness markers based on their prediction of how a listener would interpret it, and the listener interprets the utterance by reasoning about the speaker's prediction, and so on (Yoon, Tessler, Goodman, & Frank, 2020).

Acquisition of Politeness

Being suitably polite involves masterfully combining an understanding of social and contextual factors with an inventory of linguistic forms. The complexity of this ability brings into question when and how humans begin to acquire polite speech.

Production of polite speech begins early in development among English-speaking children: At 2 years, children modify their requests to adjust politeness (Bates & Silvern,

1977). At 2.5 years, children produce the word "please" (Read & Cherry, 1978) and use hints as an indirect request strategy (Newcombe & Zaslow, 1981). By 3 years, children are able to vary their utterances based on whether they are instructed to "tell" versus "ask" an addressee to give them a puzzle piece (Bock & Hornsby, 1981). 3-year-old children also possess several politeness formulas in their repertoires and use them spontaneously and appropriately quite frequently in their home context (Eisenberg, 1982).

Children understand the implications of polite speech early on. In a study by Yoon and Frank (2019), each child was read 12 stories in which two characters made requests politely and impolitely. The child was then asked one of four speaker attribute questions ("Which one was more polite/more rude/nicer/meaner]?") and one of two social implication questions (either "Which one would you rather play with?" or "Which one will [get what they want]?"). Yoon and Frank ran three experiments which tested different combinations of linguistic markers, prosodic cues (sonic elements of speech, such as intonation, stress, and rhythm), and facial expressions. They observed no substantial effect of prosodic cues or facial expression; children's inferences seemed to be supported solely by linguistic markers. They found that by 3 years, preschool children could correctly identify whether a person was more polite, more rude, nicer, or meaner than another speaker based on which speaker included politeness markers like "please" in their requests. By 4 years, preschool children understood that polite speakers are more likely to have their requests granted and tended to choose polite speakers as play partners over non-polite speakers; however, this study did not observe reliable preference for a polite speaker in children younger than 4 years.

Because (1) children tend to comprehend language before producing it (Clark & Hecht, 1983), (2) children produce "please" at 2.5 years (Read & Cherry, 1978), (3) polite language is considered prosocial (Brown & Levinson, 1978), and (4) infants as young as 6 months prefer prosocial characters (Hamlin, Wynn, & Bloom, 2007), it seems plausible that children at least as young as 2.5 years should indicate preference for a polite speaker.

156   Considering this, Yoon and Frank may have not observed reliable preference for a polite

157   speaker in children younger than 4 years due to experimental task demands.

158   The stimuli used by Yoon and Frank were visually complex with detailed characters

159   and backgrounds, which may have distracted children from the characters' speech. Because

160   the children were read a series of 12 stories, performance on the task required a long

161   attention span. Further, the stories were narrated, so the superfluous auditory input may

162   have made it difficult for younger children to note the difference between polite and

163   impolite speech. Overall, these features of the stimuli may have made the task less

164   accessible to younger children.

| Jamie wanted more water in her cup. Jamie said to Fred, "Please pour me more water." | Suzy also wanted more water in her cup. Suzy said to Fred, "Pour me more water." | Which one was being nicer? Which one will Fred give water to? |

Figure 2. Stimuli sample from Yoon and Frank (2019).

165   To combat the threat of experimental task demands, some researchers use

166   shape-preference paradigms when assessing social preference in very young children. Both

167   Hamlin et al. (2007) and Thomas and Sarnecka (2019) employ shape-preference paradigms

168   in which characters are represented by colored shapes with eyes and a mouth to indicate

169   animacy. This type of paradigm may be more accessible to young children than more

170   visually complex stimuli; basic colors and shapes allow children to easily distinguish

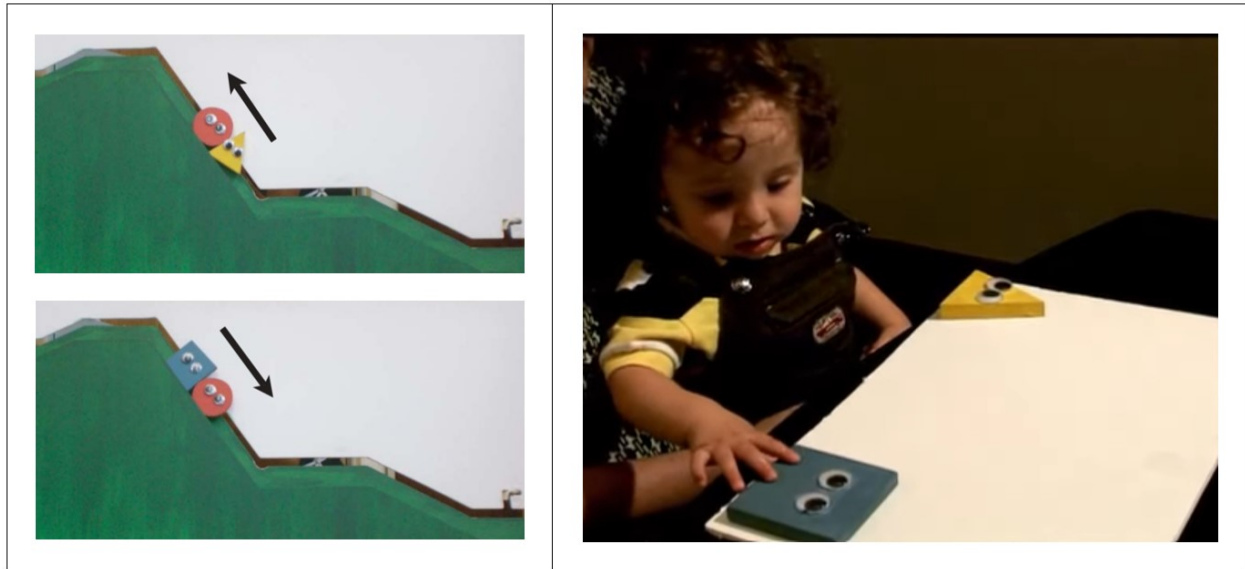171   between the characters without visual distractions.

Figure 3. Stimuli sample from Hamlin et al. (2007). A character attempted to climb a hill and was either bumped up the hill by a helper (top left panel) or bumped down the hill by a hinderer (bottom left panel). The child was presented with the helper and hinder (right panel), and the child's grabbing or reaching behavior was treated as indication of preference.
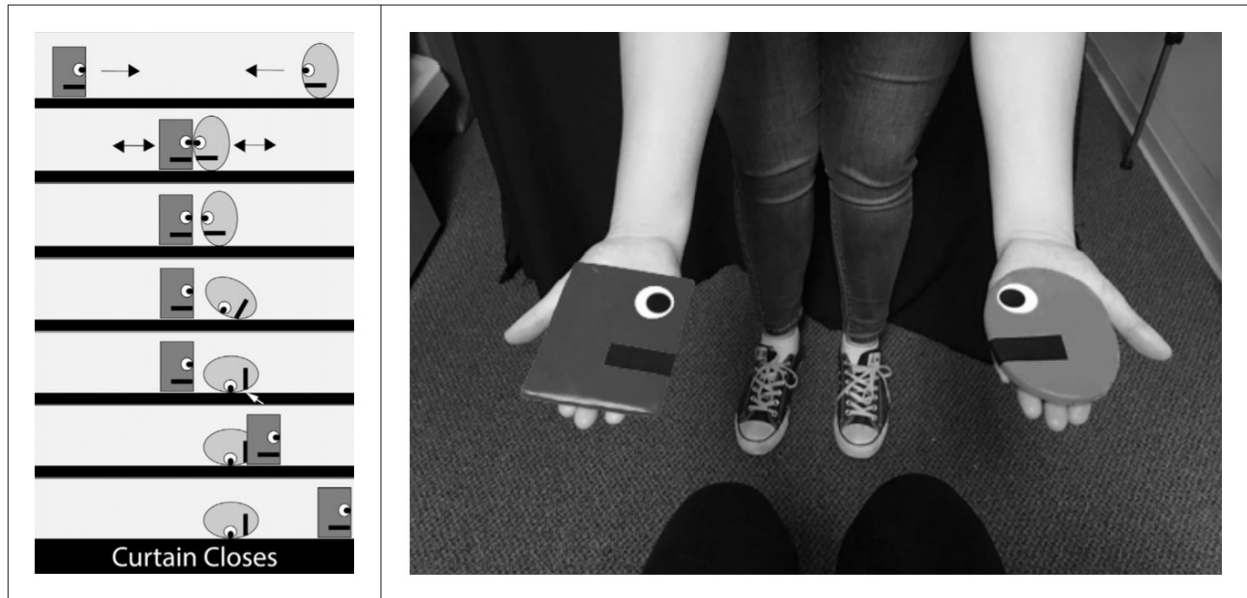
Figure 4. Stimuli sample from Thomas and Sarnecka (2019). A high-status and a low-status character approached each other and collided. The low-status character yielded by bowing and moving upstage (left panel). The child was presented with the high-status and low-status puppets (right panel), and the child's grabbing or reaching behavior was treated as indication of preference.

172 **The Current Study**

173   The current study tests 2-year-old, 3-year-old, and 4-year-old children's implicit
174 understanding of linguistic politeness by assessing their preference for a polite speaker over
175 an impolite speaker.

176   In this study, we adopt a visually simple shape-preference paradigm (Hamlin, Wynn,
177 & Bloom, 2007; Thomas & Sarnecka, 2019) to minimize visual distractions and to assist
178 children in distinguishing between characters more easily. Our stimuli consist of only two
179 animations–one featuring a polite speaker and one featuring an impolite speaker–so
180 children do not have to pay attention for very long. To minimize auditory distractions, our
181 stimuli involve no narration: The only audible speech is the polite and impolite utterances.

182   By making these adjustments, the current study proposes a more accessible task,
183 which could detect preference for a polite speaker in children younger than 4 years.

184   **Hypotheses.**

185 1. Considering our less challenging task, we predicted that 2-year-old, 3-year-old, and
186   4-year-old children would indicate preference for a polite speaker over an impolite
187   speaker (i.e., the proportion of children in each age category who indicated preference
188   for a polite speaker would differ from chance).

189 2. Considering evidence for graded comprehension of politeness in young children (Yoon
190   & Frank, 2019), we predicted that children would indicate preference for a polite
191   speaker over an impolite speaker more reliably with increasing age.

<div style="text-align: center">**Methods**</div>

Participants

Participants ($N = 56$; 15 Asian, 1 Black/African, 1 Hispanic/Latinx, 1 Native American, 29 White, 6 more than one race, 3 unreported race) included English-speaking 2-year-old ($n = 18$; 9 male, $M_{age} = 2.52$ years, $SD_{age} = 0.23$), 3-year-old ($n = 18$; 7 male, $M_{age} = 3.58$ years, $SD_{age} = 0.32$) and 4-year-old children ($n = 20$; 10 male, $M_{age} = 4.55$ years, $SD_{age} = 0.31$) children living in the U.S.A. at the time of data collection. Participants were recruited through the Department of Psychology at Stanford University through Facebook advertisements, Children Helping Science (an online recruitment platform for developmental research), and direct outreach to preschools and day cares in the Bay Area.

We selected our sample size based on a Bayesian power analysis conducted in R. Our lowest-power statistical tests were by-age-category Bayesian binomial tests. To detect an effect in which 80% of children indicate preference for a polite speaker with 80% power and a 95% credible interval, we ran 15 participants in each age category (45 total). We recruited 60 participants to compensate for exclusions and missing data. A second power analysis showed that with 60 participants across age categories, we could detect an effect in which 70% of children indicate preference for a polite speaker with 80% power and a 95% credible interval.

Prior to data collection, we decided to exclude a child from the study if:

1. The child was known to have any cognitive, auditory, or visual impairment, and the impairment was reported by the parent.

2. The child was known to have any neurodevelopmental disorder that significantly affects cognitive processing or social cognition, such as Down syndrome or autism spectrum disorder, and the disorder was reported by the parent. Attention deficit

disorder and attention deficit hyperactivity disorder were only grounds for exclusion
if the child was unable to adequately complete test trials due to inattention or
restlessness as per criterion 6.

3. The child did not hear English "all of the time" or "most of the time" as indicated by
the parent upon registration.

4. A non-participant (e.g., the child's parent or sibling) interjected or interfered by
pointing at the screen at any time during the experiment, audibly commenting, or
providing a response to either dependent variable measure.

5. The child failed to provide a response to our key dependent variable measure (DV1)
after four prompts.

6. The child was looking away from the screen for at least 25% of the animation.

7. The child was looking away from the screen during either speaker utterance.

8. The parent rated the video or audio quality below a 3 out of 5.

Stimuli

The animation began with a secondary familiarization phase (Figure 5) in which a
shape (the speaker) entered from the left of the screen, spotted two cookies on the opposite
side of the screen, gasped excitedly, approached the cookies, ate one cookie, and celebrated
by jumping up and down. The purpose of this phase was to inform the participant that the
speaker's goal was to eat a cookie.

A testing phase (Figure 6) followed in which the speaker entered from the left of the
screen and stopped in front of another shape (the listener), who was standing in the way of
the cookies. In the polite condition, the speaker said, "I am so hungry! May I have a
cookie, please?" In the impolite condition, the speaker said, "I am so hungry! Give me a

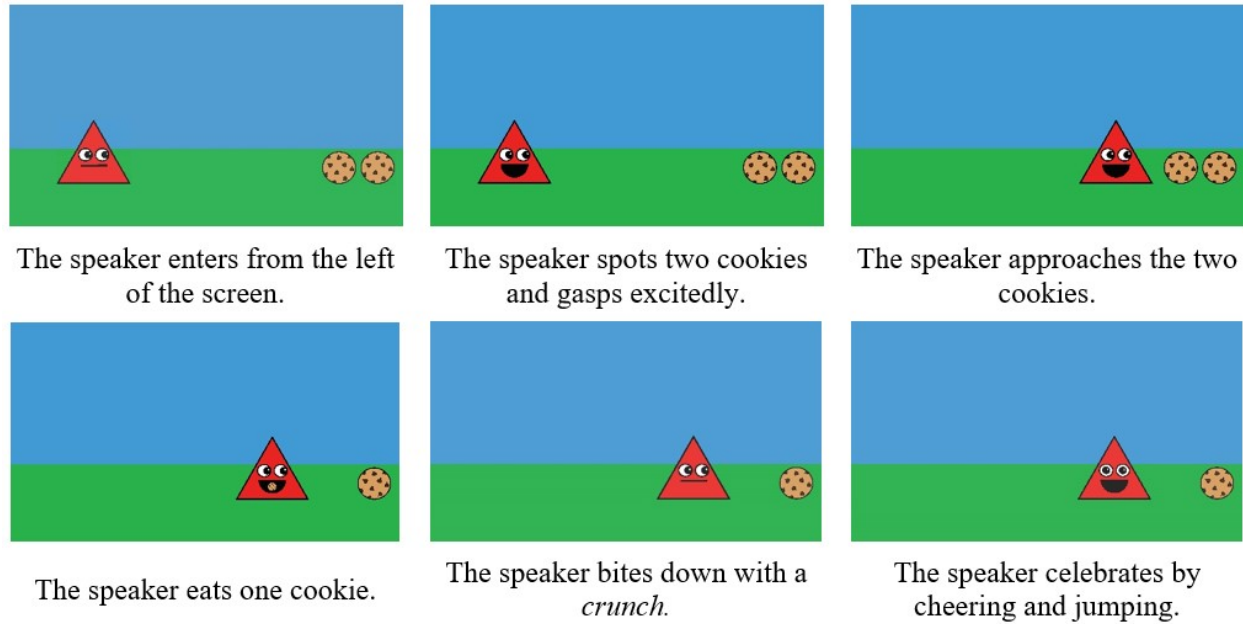|		
The speaker enters from the left of the screen.	The speaker spots two cookies and gasps excitedly.	The speaker approaches the two cookies.
The speaker eats one cookie.	The speaker bites down with a *crunch*.	The speaker celebrates by cheering and jumping.

Figure 5. Familiarization phase.

cookie now." Regardless of condition, the listener moved out of the speaker's way. The speaker gasped excitedly, crossed in front of the listener, approached the cookies, ate one cookie, and celebrated by jumping up and down.

Utterances used in the animation were prerecorded. To ensure children would make inferences based on linguistic markers alone, intonation was naturalistic and did not include exaggerated "polite" or "impolite" prosody. Utterances were cleaned using Audacity, an audio editing and recording software (Audacity Team, 2020), and RMS was standardized across conditions using Praat, a phonetics software (Boersma & Weenink, 2020).

The background consisted of a solid, green block and solid, blue block depicting grass and sky. The listener was always a blue circle. The polite and impolite speakers were represented by either a red triangle and yellow square, respectively, or a yellow triangle and red square, respectively. The triangle and square were the same height and width. The shape of the speaker (triangle/square), color of the shape (red/yellow), and order of the conditions (first/second) were counterbalanced across trials.
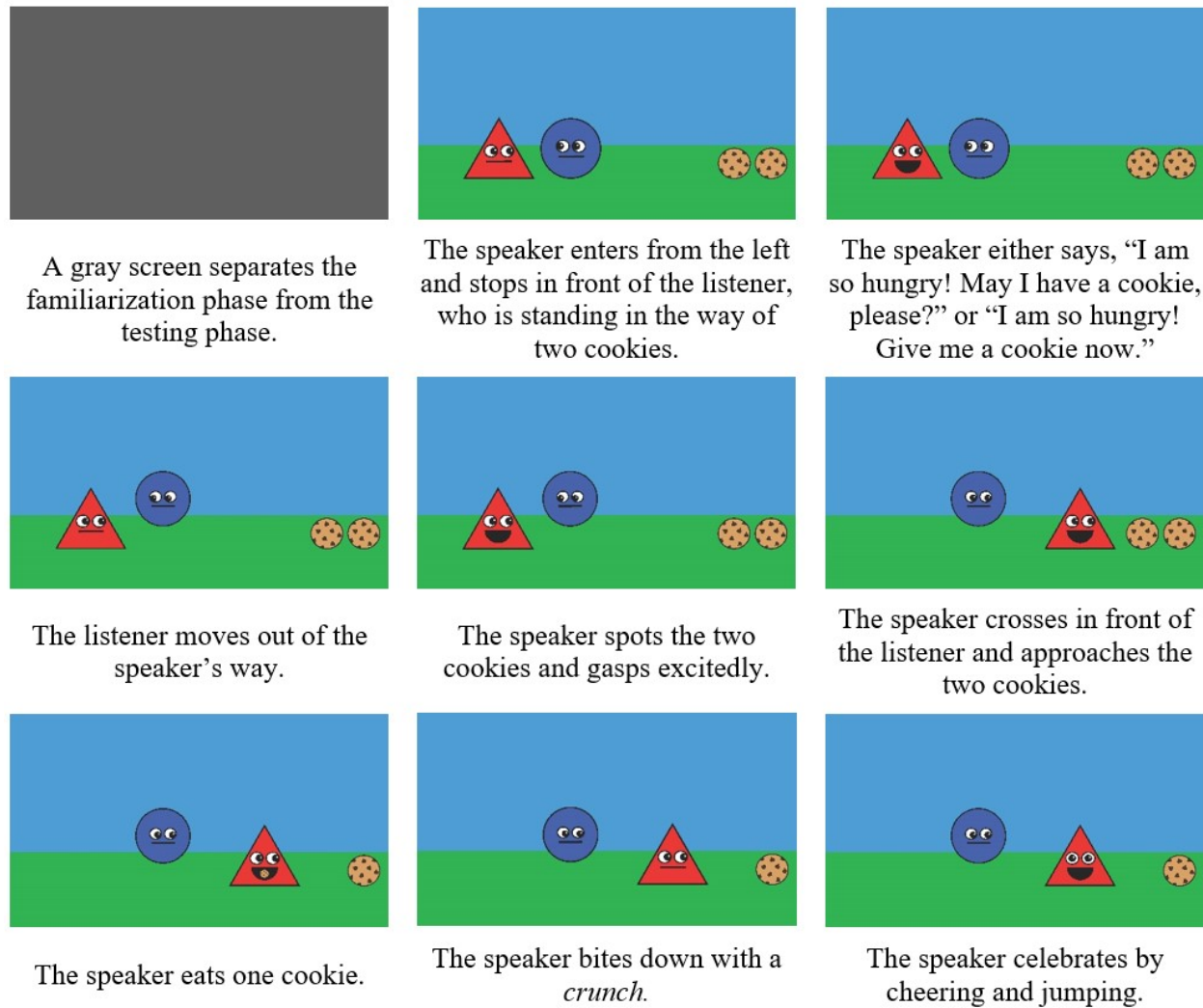
Figure 6. Testing phase.

Randomization

A generic list randomizer was used to assign the first 16 participants in each age category to one of 16 uniquely counterbalanced animations (without repeats). The same generic list randomizer was used to assign the remaining four participants in each age category to one of the 16 animations (without repeats).

Procedure

Upon registration, families completed a brief, demographic survey via email, which enabled us to confirm that each child was eligible for our study.

Children completed the study in their family's home on personal computers with an experimenter online via Zoom (a videotelephony software). A parent provided either written consent via email or verbal consent prior to testing. The attending parent was notified that they or their child may stop participation at any time. Testing sessions were recorded with parental consent. Each session began by testing audio quality and calibrating the participant's screen settings.

The experimenter began with a warm-up activity to build rapport with the child. The experimenter played a short I-Spy game with the child, during which a black and white dog emerged from behind a pile of leaves, then a brown squirrel emerged from the same pile. To avoid inducing side bias, the animals were front-facing and centered, and the pile of leaves was symmetrical.

Next, in the primary familiarization, the experimenter introduced the child to a green pentagon, which had eyes and a mouth to indicate animacy. The experimenter then showed the child what the character looks like when it "feels very sad" (downturned mouth), "feels normal" (flat-line mouth), and "feels very happy" (upturned, open mouth). The purpose of this primary phase was to introduce shapes as animate characters and to accustom the participant to facial expressions that would be seen in the upcoming animation.

After the primary familiarization phase, the animation was played. Each participant saw both the polite condition and the impolite condition as detailed above. The experimenter was not blind to condition but bared a blank expression and looked down while the animation was playing. At the end of the animation, the caregiver attending to the child was asked to close their eyes before the child's preference and reasoning were assessed. This prevented the caregiver from unintentionally influencing their child's

285   responses.

286   We measured preference between a polite speaker and an impolite speaker by

287   presenting a forced-choice in which the speakers appeared on opposite sides of the screen

288   (counterbalanced), and the participant was asked, "Which friend do you want to play

289   with?" (DV1).

290   Pointing, reaching, and verbal answers were coded equivalently as indication of

291   preference. If a child did not answer, the child was prompted three more times with

292   analogous wording. If the child did not provide an answer after four prompts, the session

293   was concluded. If the child provided an answer, the child was then asked, "Why do you

294   want to play with that friend?" (DV2, a supplementary dependent variable measure). If

295   the child did not provide an answer, the child was prompted twice more before the

296   experiment was concluded.

297   Including screen setup and debriefing, each session took approximately 10 to 15

298   minutes to complete. Following the session, parents were emailed a certificate of

299   participation for their child; children nor parents were financially compensated.

Coding and Inferences

301   Age category was coded to consist of three levels:

302   • 2-year-old children (2 years, 0 months $\leqslant$ x < 3 years, 0 months)

303   • 3-year-old children (3 years, 0 months $\leqslant$ x < 4 years, 0 months)

304   • 4-year-old children (4 years, 0 months $\leqslant$ x < 5 years, 0 months)

305   DV1 was dummy coded with preference for the polite speaker as 1 and preference for

306   the impolite speaker as 0. DV2 was coded to include:

- No reasoning: no explanation after a third prompt (e.g., silence, shrugging, or "I don't know").

- Superficial reasoning: any explanation regarding elements besides speaker utterance (e.g., "I like him," "He's red," or "Triangles are my favorite").

- Logical reasoning: any explanation that refers to speaker utterance and is consistent with the animation (e.g., describing the polite speaker as "nice" or "polite").

- Other reasoning: any explanation or utterance that cannot be classified by the three other reasoning types (e.g., an unintelligible response).

Our study used pairwise deletion: If a child did not complete DV2, their DV1 data was still included in analyses. Two-tailed tests were used for each of our analyses. We made inferences based on credible intervals, using a 95% credible interval criterion for success.

Results

We assessed whether the proportion of children in our sample who indicated preference for a polite speaker differed from chance using a Bayesian binomial test. 57% of our entire sample indicated preference for a polite speaker. The probability that 2-year-old, 3-year-old, and 4-year-old children indicate preference for a polite speaker above chance level is 0.859.

A logistic regression modeling speaker preference as a function of age showed a slightly positive–but not particularly strong–overall effect of age: Every 12-month increase in age predicted only a slight increase in the probability that a child would indicate preference for a polite speaker (see Figure 7).

To ensure we were able to characterize any variation that was not captured by our logistic regression, we faceted our data by age category. We then assessed whether the

³³⁰ proportion of children in each age category who indicated preference for a polite speaker

³³¹ differed from chance, once again using Bayesian binomial tests.

³³²   66% of 2-year-old children indicated preference for a polite speaker. The probability

³³³ that 2-year-old children indicate preference for a polite speaker *above* chance level is 0.920.

³³⁴ 34% of 3-year-old children indicated preference for a polite speaker. The probability that

³³⁵ 3-year-old children indicate preference for a polite speaker *below* chance level is 0.914. 69%

³³⁶ of 4-year-old children indicated preference for a polite speaker. The probability that

³³⁷ 4-year-old children indicate preference for a polite speaker *above* chance level is 0.959.
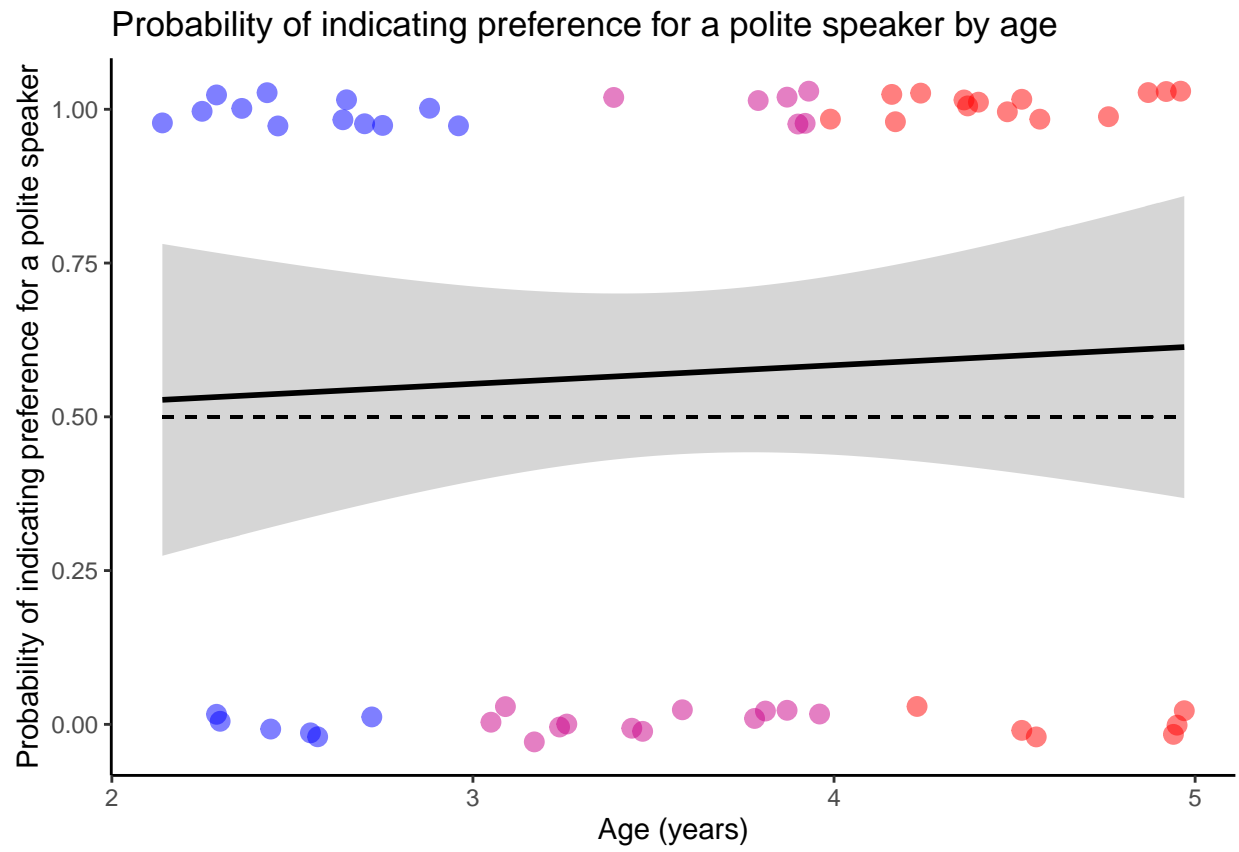
Figure 7. Each point represents an individual observation. Points have been jittered vertically for readability. Dotted, black line denotes chance performance. Solid, black line represents a logistic regression. Ribbons represent pointwise 95% confidence intervals on the model.
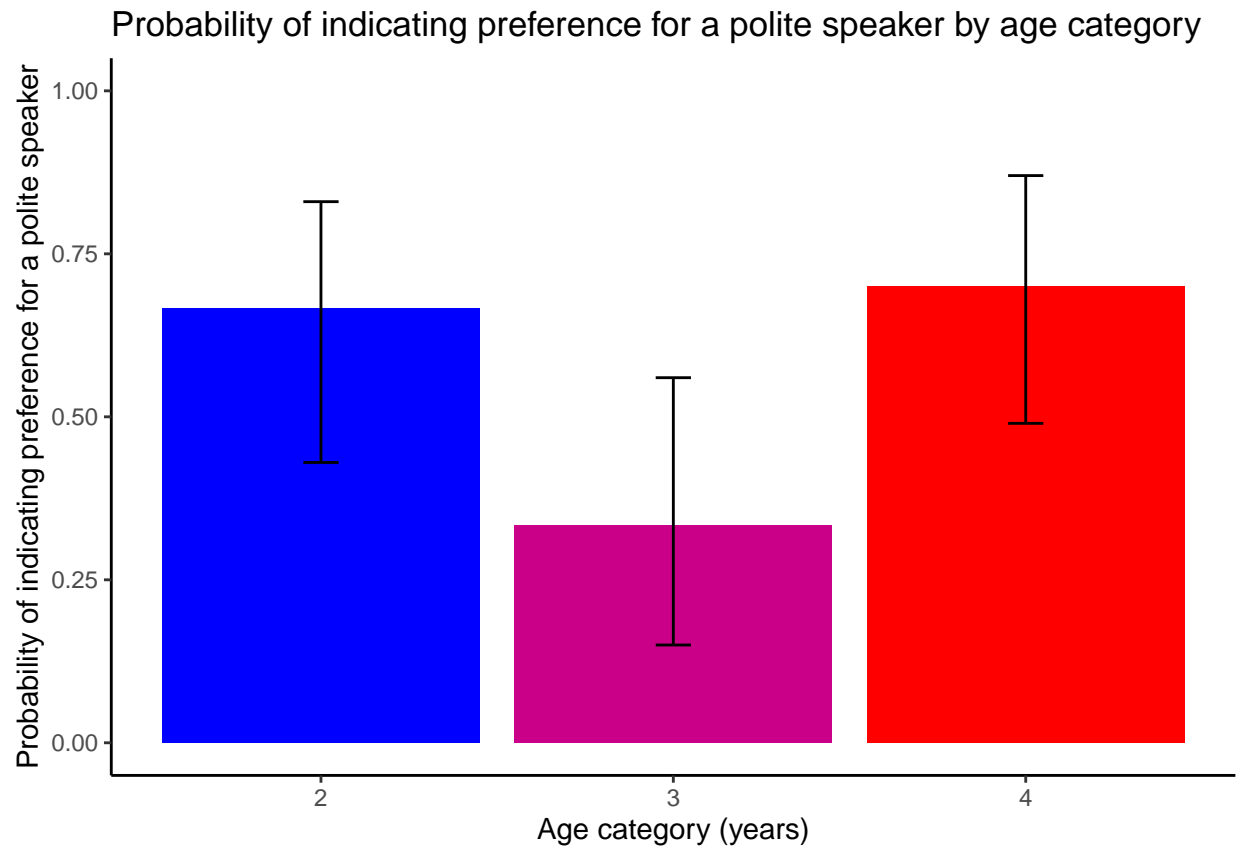
Figure 8. Each bar illustrates the mean response of participants in each age category, which is representative of the probability of indicating preference for a polite speaker. Error bars represent 95% credible intervals based on Bayesian binomial tests.

₃₃₈ **Exploratory Analyses**

₃₃₉   Our supplementary dependent variable measure did not elicit particularly

₃₄₀ consequential responses. We observed a slight increase in more advanced reasoning with

₃₄₁ age: Among 2-year-old subjects, 0% provided logical reasoning, 33% provided superficial

₃₄₂ reasoning, 50% provided no reasoning, and 17% provided other reasoning. Among

₃₄₃ 3-year-old subjects, 0% provided logical reasoning, 72% provided superficial reasoning, and

₃₄₄ 28% provided no reasoning. Among 4-year-old subjects, 15% provided logical reasoning,

₃₄₅ 65% provided superficial reasoning, 20% provided no reasoning, and 0% provided other

₃₄₆ reasoning. Anecdotally, these data might indicate that comprehension of linguistic

₃₄₇ politeness begins as implicit and becomes more explicit with age; however, assessing

₃₄₈ explicit comprehension is difficult in developmental psychology because young children's

₃₄₉ linguistic capabilities may prevent them from communicating explicit understanding.

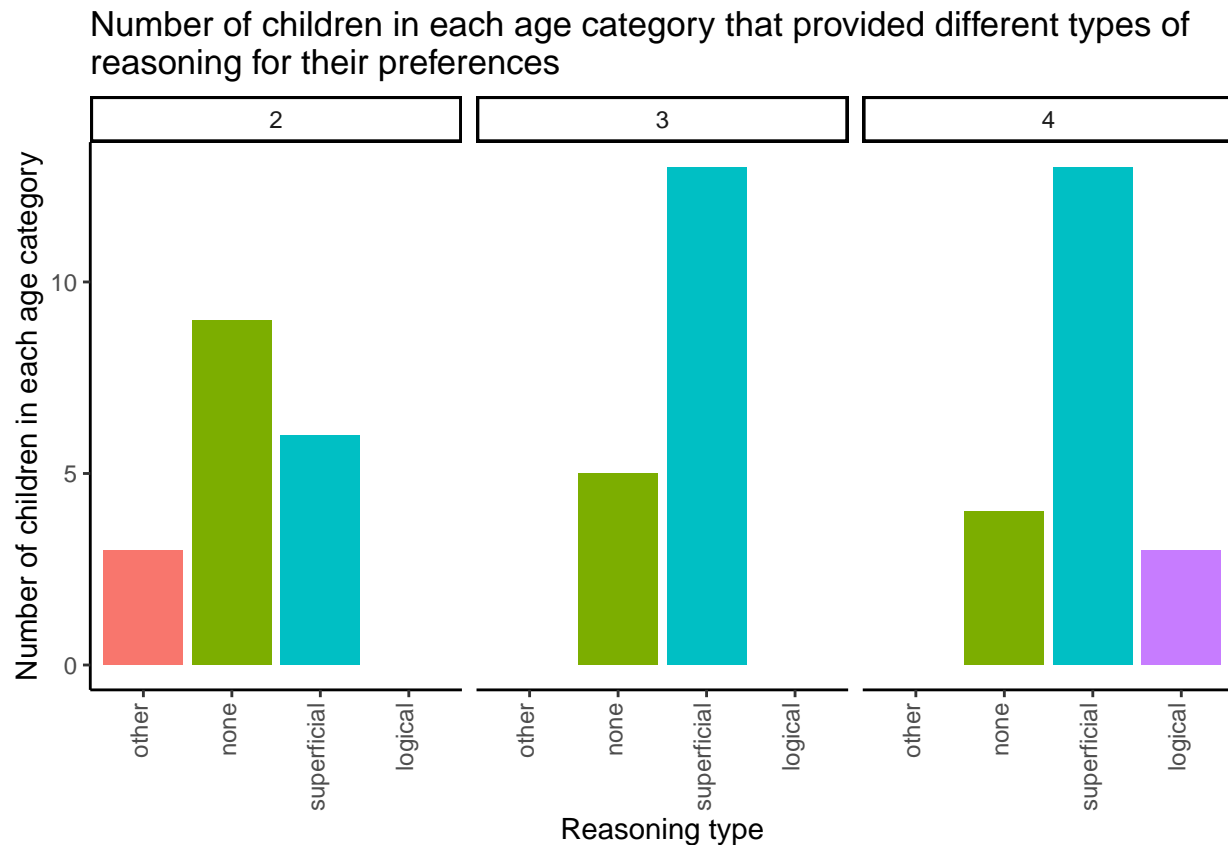Number of children in each age category that provided different types of reasoning for their preferences

Figure 9. Each bar illustrates the number of children in each age category that provided each type of reasoning in response to DV2. The plot is faceted by age category.

Discussion

In this study, we sought to determine whether children younger than 4 years possess a preference for a polite speaker over an impolite speaker. We replicated prior research which suggested that 4-year-old children reliably indicate preference for a polite speaker, whereas 3-year-old children do not (Yoon & Frank, 2019); however, our data suggest that this is not indicative of the onset of this preference. By employing a shape-preference paradigm with fewer experimental task demands than in prior studies, we were able to show that 2-year-old children also reliably indicate preference for a polite speaker over an impolite speaker. These findings suggest that the onset of an implicit comprehension of linguistic politeness may occur as early as 2 years.

360   Consistent with existing literature, our study confirmed that 4-year-old children

361   reliably indicate preference for a polite speaker (Yoon & Frank, 2019).

362   In contrast to prior literature, our combined sample of 2-year-old, 3-year-old, and

363   4-year-old children indicated preference for a polite speaker above chance level. Our logistic

364   regression revealed a slightly positive overall effect of age on the probability that a child

365   would indicate preference for a polite speaker (see Figure 7). Our results offer inconclusive

366   evidence in support of our second hypothesis: Considering evidence for graded

367   comprehension of politeness in young children (Yoon & Frank, 2019), we predicted that

368   children would indicate preference for a polite speaker over an impolite speaker more

369   reliably with increasing age.

370   The performance of 2-year-old children in our task is comparable to the performance

371   of 4-year-old children, indicating that there is not a substantial increase in the probability

372   of indicating preference for a polite speaker between 2 and 4 years: All of the cognitive

373   capacities that are necessary for identifying politeness markers, forming an opinion about

374   the speaker based on these markers, and indicating a preference is present at 2 years. This

375   finding suggests that socio-pragmatic competence–specifically implicit comprehension of

376   linguistic politeness as indicated by preference for a polite speaker–is established as early as

377   2 years: 2 years earlier than alleged by prior research (Yoon & Frank, 2019).

378   There is strong evidence that infants as young as 6 months are capable of social

379   evaluation and prefer prosocial others to antisocial others (Hamlin, Wynn, & Bloom, 2007).

380   Children begin producing polite language as early as 2 years (Bates & Silvern, 1977; Read

381   & Cherry, 1978), and children understand language prior to producing it. Reconciling this

382   existing literature with our data suggests that by 2 years, children may recognize polite

383   language as prosocial, which may motivate them to prefer polite speakers over impolite

384   speakers. This understanding of polite language as an indicator of prosociality may be due

385   in part to children detecting co-occurrence of politeness markers and other positive words,

for example, "You should be nice and say please" (Yoon & Frank, 2019).

Between 2 and 5 years, most children attend preschool, during which they experience consistent social interaction with peers. In this environment, children gain significant experience with the social world and social consequences of prosocial and antisocial behavior, which may contribute to them preferring prosocial others.

Alternatively, children may prefer polite speakers due to the reinforcement they receive from adults early on in development. English-speaking children are often explicitly taught and prompted to use politeness markers in their requests (Gleason & Weintraub, 1976), and many adults praise children who speak politely. Further, adults are more likely to reward children who speak politely, which may lead to children understanding linguistic politeness as an effective strategy for getting their requests granted.

Our sample of 3-year-old children performed much differently than expected: 3-year-old children performed *below* chance, indicating preference for the impolite speaker. If this were indicative of a true developmental trend, it would suggest that preference for a polite speaker–and perhaps comprehension and acquisition of linguistic politeness more broadly–does not develop as a smooth, upward trend across development. While we observed a numerical dip in the probability of 3-year-old children indicating preference for a polite speaker, our intuition is that this is not indicative of a true declivity. It is unusual for development to be characterized by a temporary deviation from the expected trajectory; therefore, our data may under-estimate the true probability of 3-year-old children indicating preference for a polite speaker. Unfortunately, our sample size was not large enough to assuredly discern the difference between a chance deviation and a true deviation from our hypothesized developmental trajectory. It is crucial that we replicate this study in order to confirm that this deviation is not indicative of a true developmental trend.

While preference for a polite speaker, itself, is a meaningful measure of socio-pragmatic competence, preference for a polite speaker may not sufficiently capture

children's implicit comprehension of linguistic politeness. In this study, we use preference for a polite speaker as an operationalization of implicit comprehension of linguistic politeness; however, this measurement masks comprehension of linguistic politeness that manifests in other ways.

Some children may prefer an impolite speaker due to the unexpected nature of the speaker's language. There is compelling evidence that young children prefer–and choose to engage with–toys which function unexpectedly (Bonawitz, Schijndel, Friel, & Schulz, 2012; Gweon & Schulz, 2008; Schulz & Bonawitz, 2007). The context that is presented in our animation is foreign to many children: From a very young age, if a child asks nicely, their wishes are granted, and if they ask rudely, they are corrected by an adult (e.g., "What do you say?" or "What's the magic word?"). In our animation, the request of both the polite and impolite characters were granted. The unexpected response to the impolite speaker may motivate some children to prefer the impolite speaker.

It is also worth noting that multiple children in our sample distinctly giggled after the impolite speaker made its utterance. In response to DV2, some children even credited their choice of the impolite speaker to their perception of the speaker as "funny" or "silly." Humor, as a component of social interaction, may contribute to some children's interest in and preference for impolite speakers.

If any child in our study selected the impolite speaker based on the unexpectedly impolite utterance, the unanticipated reaction to the impolite speech, or the character's humor, then that child possesses an understanding of linguistic politeness that would not be captured by our study.

Politeness is extremely broad and is used across several contexts. As such, this study was only able to examine children's preference for a polite speaker in a very specific scenario, one which represents only a very small portion of the landscape in which linguistic politeness is typically employed. Children's preference for a polite speaker may

vary across contexts. Likewise, there is myriad evidence that children hone their contextual use of politeness as they age (Axia & Baroni, 1985; Bates & Silvern, 1977; Becker & Smenner, 1986; Ervin-Tripp, 1977; Gleason & Weintraub, 1976; James, 1978; Wood, 1980); thus, young children may only possess preference for a polite speaker in a limited number of social contexts.

Through this study, we developed and demonstrated the effectiveness of a more accessible paradigm for studying politeness in young children. We discovered that children 4 years and younger are able to reliably indicate preference for a polite speaker. 2-year-old children and 4-year-old children were comparable likely to indicate preference for a polite speaker, suggesting that an implicit comprehension of linguistic politeness may be acquired by children as early as 2 years. Our sample of 3-year-old children indicated preference for a polite speaker below chance; however, we predict this is an under-estimation of the typically preferences of 3-year-old children. In order to confirm our findings, they must be replicated. Once replicated, our shape-preference paradigm can be used to study other aspects of linguistic politeness and further untangle the question of how to characterize young children's acquisition and conceptualization of polite language.

Supplementary Materials

Pre-Registration

The current study, including all analyses, was registered on OSF prior to data collection: https://osf.io/dz8vp.

Data Availability

All code, data, figures, cited papers, and pre-planned analyses are publicly available at https://github.com/HannahEveMarshall/preferring_politeness.

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