The Effects of Facial Attractiveness and Information Accuracy on Young Children' s Selective Trust: Postprint

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Abstract

Experiment 1 employed a 3×2×2 mixed design to investigate selective trust based on facial attractiveness and its characteristics in 4- to 6-year-old children when acquiring novel information. The results showed that: (1) Both boys and girls aged 4-6 exhibited selective trust toward individuals with high facial attractiveness. (2) Regarding the degree of selective trust: 5-year-olds showed higher levels than 4-year-olds, while there were no differences between 4- and 6-year-olds or between 5- and 6-year-olds; girls demonstrated higher selective trust than boys in the asking task, but no differences were observed in the endorsement task. Thus, is children' s selective trust modulated by the accuracy of information? To address this, Experiment 2 employed a 2×3 between-subjects design to explore the influence of information accuracy provided by informants on selective trust based on facial attractiveness in 4- to 6-year-old children. The results showed that: under the 50% vs. 50% accuracy condition, children did not exhibit selective trust toward informants; under the 25% vs. 75% accuracy condition, children demonstrated selective trust toward the low facial attractiveness informant who provided more accurate information. The findings indicate that: (1) When information is scarce, 4- to 6-year-old children universally exhibit biased selective trust; girls are more susceptible to social bias factors than boys. (2) When information is explicit, 4- to 6-year-old children can also make relatively rational selective trust decisions.

Full Text

Effects of Facial Attractiveness and Information Accuracy on Preschoolers' Selective Trust

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Abstract

Experiment 1 employed a 3 × 2 × 2 mixed design to examine preschoolers' selective trust based on facial attractiveness when acquiring novel information and its developmental characteristics among 4- to 6-year-olds. Results showed: (1) Both boys and girls aged 4-6 exhibited selective trust toward informants with high facial attractiveness. (2) Regarding the degree of selective trust: 5-year-olds showed higher levels than 4-year-olds, while no differences emerged between 4- and 6-year-olds or between 5- and 6-year-olds. Girls demonstrated greater selective trust than boys in the ask task, but no gender difference appeared in the endorse task. Given these findings, Experiment 2 used a 2 × 3 between-subjects design to investigate how informants' information accuracy influences 4- to 6-year-olds' selective trust based on facial attractiveness. Results revealed: Under 50% vs. 50% accuracy conditions, preschoolers showed no selective trust toward either informant. Under 25% vs. 75% accuracy conditions, preschoolers displayed selective trust toward the low-attractiveness informant who provided more accurate information. These findings indicate: (1) When information is lacking, 4- to 6-year-olds universally exhibit biased selective trust, with girls more susceptible to social bias factors than boys. (2) When information is explicit, 4- to 6-year-olds can make relatively rational selective trust decisions.

Keywords: preschoolers; information accuracy; facial attractiveness; selective trust; social prejudice

1. Introduction

Testimony epistemology in philosophy posits that human knowledge and beliefs originate from testimony, broadly defined as assertions made by informants to recipients. Thus, individual learning can be conceptualized as trust in others' testimony. Harris and colleagues pioneered research on children' s selective trust in testimony, borrowing this philosophical term. While Western studies have not explicitly defined selective trust, recent domestic research has offered various definitions. Integrating these perspectives, this study defines selective trust as the process by which children, when acquiring new information, choose to ask specific informants for information or accept information from particular informants based on their epistemic or social cues.

The classic paradigm in selective trust research is the "conflicting informants" paradigm. Children are first presented with novel objects and asked to name them to ensure they cannot make independent judgments. They then complete ask and endorse tasks. In the ask task, children are simultaneously shown two informants differing in characteristics and asked which one they want to tell them the answer. In the endorse task, the two informants provide conflicting answers, and children must indicate which answer they endorse. Children respond verbally or by pointing, and researchers analyze the proportion of trials

in which children ask or endorse each informant to examine developmental patterns and influencing factors. Informant characteristics can be either external features or features of the provided information itself.

Previous research has identified two categories of factors influencing children' s selective trust. Epistemic factors primarily include informants' knowledge capabilities, reliability of provided information, and contextual background. For example, informants' knowledge state, expertise, accuracy, and access to situational information all play roles. Social factors encompass informants' social trustworthiness, social conventions, social categories, social emotions, and perceptual biases. These include traits like honesty and friendliness, age, emotional connection with children, accent, gender, body size, physical disability, and facial attractiveness. When learning from such sources, children' s selective trust may be influenced by social biases, leading to irrational selective trust.

When knowledge cues are available in the information context, does children' s social bias-based selective trust become moderated by these cues? Research on children' s epistemic trust offers insights. Based on whether new information in selective trust studies includes corresponding knowledge cues, new information can be categorized into five types: completely uncertain, low-certainty, moderate-certainty, high-certainty, and completely certain. Logically, all five levels exist. However, in practice, different information types are typically represented by either a completely novel item or a synthesis of two familiar items retaining certain features. In such syntheses, "low-certainty new information" is difficult to implement because "less A + more B" produces the same effect as "more A + less B." For instance, 25% A + 75% B and 75% A + 25% B both result in one item dominating with 75% of features, constituting high-certainty information. Therefore, studies using object naming tasks typically employ completely uncertain, moderate-certainty, or high-certainty information.

Completely uncertain information refers to entirely unfamiliar information, such as artificial pseudowords for novel objects. When acquiring such information, children typically rely on informants' epistemic reliability or social cues to make trust decisions. If children lack both self-perceived cues and epistemic reliability cues from informants, they consider social factors related to informants, such as gender, facial attractiveness, accent, or health status.

Moderate-certainty information contains equal 50% features from two categories, making it ambiguous. For example, an object resembling both a spoon and a key represents equally correct new information. Research shows that when acquiring such information, children develop selective trust based on informants' trustworthiness features. Since the new information supports both informants equally and provides no cues for selective trust, children must rely on trustworthiness-related cues.

High-certainty information typically possesses dominant features of one category while containing secondary features of another. For instance, a clear shoe with two small wheels—a synthesis containing both shoe and car features. When

acquiring such information, if a trustworthy informant' s answer conflicts with the dominant features, children adjust their epistemic trust, substituting self-perception for the incorrect information or reducing selective trust to chance levels.

In summary, knowledge serves as a reliable source only under certain conditions. The certainty of new information, determined by knowledge cues, significantly influences children' s selective trust. This relates to Chan and Tardif' s "effect of prior knowledge strength," which posits that when children' s prior knowledge can definitively determine information (typical everyday objects), they reject informants' contradictory information. However, when information is uncertain and cannot be judged through prior knowledge, they likely accept the informant' s information.

Does children' s social bias-based selective trust depend on informants' information accuracy? How does it manifest across completely uncertain, moderate-certainty, and high-certainty information contexts? Bascandziev and Harris (2014) found that 4- to 5-year-olds in completely uncertain contexts showed biased selective trust based on facial attractiveness. However, 4- to 5-year-old boys in the ask task did not show selective trust toward high-attractiveness informants, leading researchers to conclude that boys this age lack preference for attractive versus unattractive informants. Closer analysis reveals that the attractiveness ratings used in their study were provided by college students, whose beauty standards may differ from children' s. Research indicates developmental differences between children and adults in preferences for high-attractiveness faces. Therefore, this study hypothesizes that the null result for boys occurred because the beauty standards were not detectable by 4- to 5-year-old boys. Additionally, the study did not report the magnitude of difference between high- and low-attractiveness faces, leaving uncertain whether differences reached detectable levels. The reported gender difference, based on combined 4- and 5-year-old groups, may have obscured age-specific patterns.

Based on these concerns, this study designed two experiments. Experiment 1 improved upon previous methodological limitations by first examining whether 4- to 6-year-olds show selective trust based on facial attractiveness and exploring age and gender characteristics. Given the target age group, we used age-matched raters to evaluate facial materials and selected photos with significant attractiveness differences. The design included age as a factor to examine developmental patterns. Experiment 2 investigated how information accuracy influences children' s attractiveness-based selective trust. When children evaluate informants using both facial attractiveness and accuracy cues, which factor dominates? Do children adjust their selective trust with age when accuracy information is available, demonstrating decision-making flexibility?

2. Experiment 1

2.1 Purpose and Hypotheses

This experiment investigated whether 4- to 6-year-olds show selective trust based on facial attractiveness when learning completely uncertain new information. If present, we further examined age and gender characteristics.

Hypotheses: (1) If children' s trust levels toward high- or low-attractiveness informants exceed chance levels, facial attractiveness influences selective trust; if at chance levels, it does not. (2) If selective trust varies by age and gender, it is related to these factors.

2.2 Method

2.2.1 Participants We recruited 195 participants from two urban public kindergartens and one urban public elementary school in the city. They were divided into three age groups: 4-year-olds, 5-year-olds, and 6-year-olds. Detailed information appears in Table 1 .

2.2.2 Materials We used StandalonePsychoPy-1.82.01-win32 to program the experiment and present materials on a 14-inch Windows laptop for data collection. Materials included female photos with contrasting facial attractiveness, novel object names, and artificial pseudowords.

Photo Selection: Initial photos comprised 10 pairs from Wang et al. (2015). Fifty-one 4- and 5-year-olds (not participating in the formal experiment) rated each pair for familiarity, similarity, and attractiveness using forced-choice judgments. We calculated rating proportions and conducted goodness-of-fit tests, selecting five pairs that were unfamiliar to children with significant differences in similarity and attractiveness for the formal experiment.

Novel Object Photos and Pseudoword Equivalence: Novel object photos were selected from Horst' s (2009) NOUN database. Fifty 4- and 5-year-olds (not participating in the formal experiment) served as raters. Each child saw one novel object photo and was asked whether they recognized it. They were then told two artificial pseudowords and asked to choose the correct name. All children reported not recognizing the objects. We analyzed choice proportions and conducted goodness-of-fit tests, selecting five groups with nonsignificant differences as experimental materials.

2.2.3 Design We used a 3 (age: 4, 5, 6 years) × 2 (gender: male, female) × 2 (task type: ask, endorse) mixed design, with task type as a within-subjects factor and age and gender as between-subjects factors.

The dependent variable was trust in high-attractiveness informants, measured by four indicators: (1) Selective trust indices: ask rate (proportion of ask trials directed to high-attractiveness informants) and endorse rate (proportion of

endorse trials for high-attractiveness informants). (2) Degree of selective trust: ask magnitude (ask rate minus 0.5) and endorse magnitude (endorse rate minus 0.5). The value 0.5 represents chance level; subtracting chance level expresses deviation from random responding. Although statistically equivalent to ask and endorse rates, these magnitude measures more accurately express selective trust degree, making them preferable for this study.

Control of extraneous variables: Randomization of (1) presentation order of face photo pairs, (2) pairing of informant photos with novel objects, (3) probability of high/low-attractiveness faces appearing on left/right screen positions, and (4) probability of which informant provided which name.

2.2.4 Procedure The experiment was administered individually, lasting approximately 5–8 minutes.

Step 1: Information Collection. The experimenter established rapport with each child and collected demographic information.

Step 2: Formal Experiment. The experiment consisted of five trials, each with different face photos, novel objects, and pseudowords, following identical procedures:

- **Trial Introduction and Novel Object Presentation:** Children were told: "Next, some objects we don' t know will appear on the screen. I want to know what they are. Can you help me?"After responding, a novel object photo appeared centrally. The experimenter asked: "Have you seen this? Do you know what it is?" Responses were recorded. If children claimed recognition and named the object, the experimenter gently corrected them. If they reported unfamiliarity, the procedure continued directly.
- **Ask Task.** Two female face photos appeared side-by-side on screen. The experimenter asked: "One of these aunts knows the object' s name. Who would you like to ask?" Children responded by pointing or speaking, and the experimenter recorded responses via keypress.
- **Informants Provide Names.** The experimenter said: "Both aunts told us the object' s name, but only one is correct. Let' s see what names they gave!" Face photos appeared centrally with pseudowords below. The experimenter pointed to each face and stated the corresponding name.
- **Endorse Task.** Two face photos appeared with the novel object below them, all centered. The experimenter asked: "Which aunt' s name do you think is the object' s real name?" Children responded by pointing or speaking, and responses were recorded.

Step 3: Conclusion. The experimenter praised the child and gave a sticker as a reward.

2.3 Results

We analyzed data using Microsoft Excel 2016 and SPSS 19.0.

2.3.1 Selective Trust Toward Faces in 4- to 6-Year-Olds To examine whether 4- to 6-year-olds show selective trust toward high-attractiveness informants, we conducted one-sample t-tests (comparing to chance level 0.5) on ask and endorse rates for each age group. Results appear in Table 2 .

Table 2 shows that in both ask and endorse tasks, boys and girls aged 4, 5, and 6 selected high-attractiveness informants at rates significantly above chance. This indicates that when object names were unknown, children chose to ask high-attractiveness informants for information and endorsed names provided by high-attractiveness informants. Thus, children aged 4–6, regardless of gender, demonstrated selective trust based on facial attractiveness.

2.3.2 Age and Gender Characteristics of Selective Trust To analyze age and gender characteristics, we conducted a 3 (age: 4, 5, 6) × 2 (gender: male, female) × 2 (task: ask, endorse) repeated-measures ANOVA on ask and endorse magnitudes.

Results showed significant main effects of age, $F(2, 189) = 4.86$, $p < 0.01$, partial $^2 = 0.05$. Post-hoc LSD tests revealed that 5-year-olds showed greater selective trust toward high-attractiveness informants than 4-year-olds ($p = 0.002$). No differences emerged between 4- and 6-year-olds ($p = 0.071$) or between 5- and 6-year-olds ($p = 0.193$), suggesting age 5 may be a transitional period for attractiveness-based selective trust.

Gender showed a significant main effect, $F(1, 189) = 7.35$, $p < 0.01$, partial $^2 = 0.04$. Girls exhibited greater selective trust toward high-attractiveness informants than boys, indicating girls are more likely to ask high-attractiveness informants and endorse their views. The age × gender interaction was nonsignificant, $F(2, 189) = 0.27$, $p = 0.765$, showing consistent developmental trends for both genders.

Task type showed a significant main effect, $F(1, 189) = 4.86$, $p < 0.01$, partial $^2 = 0.05$. Children aged 4–6 showed greater selective trust toward high-attractiveness informants in ask tasks than endorse tasks, suggesting information influences their selective trust. The task type × age interaction was nonsignificant, $F(2, 189) = 1.82$, $p = 0.165$, indicating consistent developmental trends across tasks. The three-way interaction was also nonsignificant, $F(2, 189) = 0.38$, $p = 0.684$. However, the task type × gender interaction was significant, $F(1, 189) = 4.38$, $p < 0.05$, partial $^2 = 0.02$, as shown in Figure 1 [Figure 1: see original paper].

Simple effects analysis revealed: (1) Boys showed no task type difference in selective trust toward high-attractiveness informants, $F(1, 193) = 1.59$, $p = 0.208$, indicating consistent trust levels across ask and endorse tasks. Girls

showed significant task type differences, $F(1, 193) = 18.03$, $p < 0.001$, $^2 = 0.09$, with greater trust in ask than endorse tasks. (2) In ask tasks, gender differences emerged, $F(1, 193) = 12.10$, $p < 0.001$, $^2 = 0.06$, with girls showing greater trust than boys. No gender difference appeared in endorse tasks, $F(1, 193) = 1.48$, $p = 0.225$.

3. Experiment 2

3.1 Purpose and Hypotheses

This experiment examined how informants' information accuracy influences preschoolers' attractiveness-based selective trust. We hypothesized: (1) Under equal accuracy (50% vs. 50%) with ambiguous objects, if children trust high-attractiveness informants above chance, attractiveness dominates; if at chance, accuracy dominates. (2) Under unequal accuracy (25% vs. 75%) where low-attractiveness informants provide more accurate names for high-dominance objects, if children trust low-attractiveness informants above chance, accuracy dominates; if at chance, both factors matter; if below chance, attractiveness dominates.

3.2 Method

3.2.1 Participants We recruited 177 participants from two urban public kindergartens and one urban public elementary school, divided into three age groups. Detailed information appears in Table 4 .

3.2.2 Materials Materials included face photos (same as Experiment 1) and composite object photos from Jaswal' s (2004) database. Two types were used: (1) 75%-feature composites where one category' s features dominated, and (2) 50%-feature composites with equal features from two categories, making them perceptually ambiguous.

To verify these classifications, we tested 70 children aged 4–6. Results confirmed that children perceived 50%-feature composites as equally representing both objects and 75%-feature composites as representing the dominant category, validating our materials.

3.2.3 Design We used a 3 (age: 4, 5, 6 years) × 2 (accuracy: 50% vs. 50%, 25% vs. 75%) between-subjects design. In equal-accuracy conditions, both informants provided different category names for 50%-feature composites. In unequal-accuracy conditions, high-attractiveness informants provided names for the 25% feature while low-attractiveness informants provided names for the 75% feature. Dependent variables were identical to Experiment 1.

3.2.4 Procedure The procedure mirrored Experiment 1, with one modification: when children named one of the composite' s features, the experimenter

probed whether it could be the other feature name before stating uncertainty about correctness.

3.3 Results

3.3.1 Selective Trust Under Different Accuracy Conditions Ask and endorse rates for each age group appear in Table 5 . One-sample t-tests (against chance 0.5) appear in Table 6 .

In ask tasks, children in both accuracy conditions selected high-attractiveness informants above chance, indicating they preferentially asked attractive informants for information regardless of accuracy.

In endorse tasks, patterns differed by condition. Under equal accuracy, children' s selection of high-attractiveness informants did not differ from chance, showing no selective trust. Under unequal accuracy, children selected high-attractiveness informants significantly below chance, demonstrating selective trust toward low-attractiveness informants who provided more accurate, dominant-feature names.

3.3.2 Age Differences in Ask Task Trust Degree Since children showed selective trust toward high-attractiveness informants in ask tasks across both accuracy conditions, we examined age differences in ask magnitude. A 2 (accuracy) $\times$ 3 (age) ANOVA revealed no significant main effects or interactions (all ps > 0.05), indicating equivalent trust degrees across ages 4–6 in ask tasks.

3.3.3 Age Differences in Endorse Task Trust Degree Under unequal accuracy conditions, children showed selective trust toward low-attractiveness informants in endorse tasks. A one-way ANOVA on trust toward low-attractiveness informants revealed no significant age effect, $F(2, 82) = 2.27$, $p = 0.110$, indicating equivalent trust degrees across ages 4–6.

4. General Discussion

4.1 Material Selection in Selective Trust Research

Bascandziev et al. (2014) found that 4- to 5-year-olds show biased selective trust based on facial attractiveness, but boys in ask tasks did not prefer high-attractiveness informants. Our suspicion about this null finding led us to have 4- to 5-year-olds rate face materials, selecting photos with significant attractiveness differences. Using this improved methodology, we found that boys and girls aged 4, 5, and 6 all showed selective trust toward high-attractiveness informants, contradicting Bascandziev and Harris (2014). This suggests their null result for boys stemmed from inappropriate materials. When attractiveness differences are rated by age-matched children, both boys and girls demonstrate attractiveness-based selective trust. Our material improvement provides more accurate understanding of this phenomenon.

Two explanations exist for attractiveness-based selective trust. First, the "halo effect" in interpersonal perception suggests that favored individuals are attributed numerous positive social traits—attractive faces are perceived as more trustworthy and intelligent. Children may generalize positive feelings from attractive faces to judgments of informant trustworthiness. Second, general negativity bias suggests people attend more to negative events, recall them more easily, and avoid them. Children may trust high-attractiveness informants because they actively avoid low-attractiveness ones.

Although children aged 4–6 all showed attractiveness-based selective trust, the degree varied by age. Five-year-olds showed stronger trust than 4-year-olds, with no differences between 5- and 6-year-olds or between 4- and 6-year-olds. This suggests age 5 may be a transitional period. Research indicates that 5-year-olds' increased brain development and social interaction activities make them more sensitive to facial information, leading them to use this cue more frequently in social perception and trust decisions. This aligns with our findings.

Experiment 1 also examined task type differences. Girls showed greater sensitivity to high-attractiveness informants in ask tasks, possibly due to stronger facial information processing abilities. Research shows girls have more robust attractiveness concepts and reference female appearance more than boys. Boys' poorer spontaneous classification of attractiveness may render them less sensitive to facial differences during initial encounters.

Girls' greater trust in ask versus endorse tasks may reflect differential exposure time—ask tasks involve first impressions, while endorse tasks involve second encounters. Initial trust judgments may be more influenced by attractiveness sensitivity, making younger children and boys with less-developed attractiveness concepts show weaker preferences. Additionally, ask tasks only require choosing between faces, while endorse tasks add object names, potentially reducing attractiveness-based trust. Whether and how object names constrain selective trust became the focus of Experiment 2.

4.2 Dependent Measures in Selective Trust Research

Previous studies have used ask and endorse rates as dependent variables. This study employed ask magnitude and endorse magnitude—the degree to which children' s binary trust judgments deviate from chance level (0.5). Although statistically equivalent to rates (differing only by 0.5), rates directly describe "choice responses" rather than "trust degree." Since selective trust research primarily examines whether selective trust exists and how its degree varies across conditions, magnitude measures provide more conceptually appropriate dependent variables that directly express trust degree.

4.3 Task Type Differences in Selective Trust

Results revealed task type differences: children showed greater trust toward high-attractiveness informants in ask than endorse tasks. This may occur be-

cause ask tasks lack cognitive cues for trust judgments, potentially involving more emotional arousal. Endorse tasks add informant-provided names, activating cognitive and semantic processing—rational judgment. Research shows affect-based evaluations produce more extreme behavioral decisions than cognition-based ones. Thus, completely unfamiliar information (low rational component) yields trust above chance; 50% vs. 50% accuracy (moderate rational component) yields chance-level trust; 25% vs. 75% accuracy (rational dominance) leads children to choose the more accurate, low-attractiveness informant.

We argue that trust judgments involve both rational and irrational components. The psychological process in ask tasks likely follows: perception → judgment → emotion → decision. The core 环节 is judging informant trustworthiness. Once children deem someone trustworthy, positive emotions and approach behavior follow; untrustworthiness triggers negative emotions and avoidance. Future research should test whether these premises hold.

4.4 Developmental Characteristics of Selective Trust

We examined age differences in biased selective trust. Five-year-olds showed higher levels than 4-year-olds, consistent with research on children' s selective trust based on bystander nonverbal cues. Five-year-olds' brain development and increased social cooperation make them more susceptible to social perception factors, even biases unrelated to informant trustworthiness. While socialization benefits adaptation, it may negatively impact cognitive activities—a key consideration for educators guiding children to evaluate informants more objectively.

Girls trusted high-attractiveness informants more than boys when asking for information, possibly because girls are more sensitive to facial information and rely more on appearance in trust judgments. Research shows females have stronger facial perception and memory abilities across the lifespan, which may contribute to this gender difference.

4.5 Rationality in Selective Trust

Experiment 2 examined how epistemic factors—specifically information accuracy—influence children' s trust. Although children show biases in social learning, these lack solid foundation. When epistemic cues like accuracy appear, especially when knowledge cues guide decisions, children flexibly adjust their selective trust. Our findings show that from ages 4 to 6, children trusted less attractive but more accurate informants. This indicates rational decision-making, contrasting with Bascandziev et al. (2016), who found that 4- to 5-year-olds' trust was more influenced by attractiveness. Differences in paradigms and accuracy manipulations may explain these discrepant findings.

Notably, 4- and 6-year-olds showed similar sensitivity to accuracy. Contrary to the expectation that younger children have poorer rational decision-making, 4-year-olds relied on information similarly to 6-year-olds. When information was ambiguous (50% correct), all children preferred attractive informants; when

information clearly favored one informant, all children relied on accuracy. This raises questions about whether children who rely purely on appearance exist and when information-based decision-making emerges—topics requiring further investigation.

4.6 Gender of Selected Informants

This study used female photos to examine children' s selective trust toward female faces. Would male facial attractiveness similarly influence trust? During material selection, we found that 4- to 5-year-olds could not reliably differentiate male faces' attractiveness, suggesting that children' s ability to discriminate male facial attractiveness may develop more slowly than for female faces. While some research suggests the "what is beautiful is good" stereotype applies to both genders, other studies find it varies by target gender. Male informants represent an important information source for children' s indirect learning. Whether male facial attractiveness influences selective trust warrants future investigation.

Conclusions

1. When information is deficient, 4- to 6-year-olds universally show biased selective trust, with girls more vulnerable to social bias than boys.
2. When information is explicit, 4- to 6-year-olds can make relatively rational selective trust decisions.

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Note: Figure translations are in progress. See original paper for figures.