

Supplementary Materials

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S1. Study 1

S1.1. Stimuli

The plant stimuli were made of plastic pots (height = 8 cm), with round black plastic dirt-like discs (diameter = 8 cm) glued inside 1 cm below the edge of the plant pots. The plants' subtle shape cue part consisted of fabric or plastic plant leaves (height = 10 cm, width = 13 - 18 cm). The plant leaves were selected so that the color variability within each set was minimal. The artifacts consisted of artificial plant leaves of the exact same type, number and size as the plants' leaves. However, the plant leaves were colored with either silver (set A) or gold (set B) to appear artificial. The artifacts' subtle shape cue part was attached to round wooden rods (diameter = 2 cm, height = 20 cm). The plant pots and artifact rods were covered with yellow and blue fabric tape.

The subtle shape cue parts of plant and artifact stimuli were created by selecting homogeneously colored artificial plants available at supermarkets and online decoration stores. Where the color of the plants was not homogeneous, the artifacts were colored to reflect shades visible on plants. This was generally done by coloring parts of the artifacts' subtle shape cue part with the color opposite to the color of subtle shape cue part of the set (gold on set A, and silver on set B). Due to this color-based matching, familiarization artifacts of set A and parts of choice object 1 of set A were colored in gold, and the contrast object and choice object 2 of set B had silver "stems".

S1.2. Procedure

Phase	German	English
Familiarization phase	Schau mal, das ist ein <i>Toma</i> und das ist ein <i>Toma</i> . Das ist ein <i>Toma</i> und das ist ein <i>Toma</i> . Und nicht vergessen, das ist ein <i>Toma</i> und das ist ein <i>Toma</i> .	Look this is a <i>toma</i> and this is a <i>toma</i> . This is a <i>toma</i> and this is a <i>toma</i> . And don't forget, this is a <i>toma</i> and this is a <i>toma</i> .
Contrast phase	Ohoh, das ist kein <i>Toma</i> .	Uh oh, this is not a <i>toma</i> .
Choice phase	Schau mal das an!	Look at this!
	Weißt du noch, das hier war ein <i>Toma</i> . Kannst du mir zeigen welches dieser beiden dazu passt?	Remember, this one was a <i>toma</i> . Can you show me which one of these two goes with this one?
	Super gemacht!	Great job!

S1.3. Additional Coding, Analysis, and Results

S1.3.1. Coding

Table S1

Coding Scheme for Infants' Choices

	Code	Description
(0/1)	Visually guided reach towards a test object	The infant reaches towards and touches any part of a test object while looking at that object If the infant reaches towards and touches both test objects, the visually guided reach is coded as the test object the infant looks at while touching it
(2)	No touch	The infant does not touch a test object within 60 seconds.
(3)	Ambiguous	The infant touches both or one of the test objects without a clear visually guided reach. For example, the infant touches both test objects and it is ambiguous which one was looked at or a single test object is touched accidentally (i.e., without a look).
(4)	Parental interference	The parent guides the infant's hand towards an object or continuously talks to and distracts the infant during the choice phase.

Infants' choices were scored by two independent coders (one blind coder, and the first author) from videos of the test sessions. Coders determined whether infants showed a visually guided reach (see Table S1) within 60 s. These choice phases received a value of 0 = pot/rod color match or 1 = subtle shape cue match. Choice phases were excluded from further analyses, if infants' choice received a final score of 2 (no touch), 3 (ambiguous touch) or 4 (parental interference, see Table S1). If the first two coders did not agree on a choice, a third coder either resolved the issue or, if all three coders did not agree, the choice was coded as ambiguous and excluded from further analyses. Inter-rater agreement was as follows:

Krippendorff's $\alpha = .90$.

There were no clear differences in the frequency of exclusion reasons across the two conditions when considering all data (including from infants who were not included in the final sample, because they did not make at least two clear choices for a test object). $N = 12$ choice phases were excluded from the artifact condition, and $N = 11$ from the plant condition due infants not touching either test object during the choice phase. $N = 8$ ambiguous choices were excluded from the artifact condition, and $N = 6$ from the plant condition. An additional $N = 2$ choice phases were excluded due to parental interference (the parent pointed to one of the available test object) in the artifact condition.

S.1.3.2. Model investigating Infants' Choices in Study 1

Table S2

Results of the Model investigating the Effect of Condition on Infants' Choices in Study 1

Term	Estimate	SE	CI lower	CI upper	χ^2	DF	<i>p</i>
(Intercept)	-0.172	0.313	-0.949	0.456			(1)
Condition	0.681	0.347	0.061	1.582	3.906	1	.048
Gender	0.015	0.346	-0.749	0.784	0.002	1	.966
ChoicePhase.z	-0.263	0.174	-0.708	0.091	2.239	1	.135

(1) Not indicated because of having limited interpretation. Reference levels were set as

follows: condition = artifact, gender = male. Note. 95% Confidence Intervals were calculated

based on a function kindly provided by Roger Mundry.

S1.3.3. Plant Experience Questionnaire

To examine the role of experience with a category on infants' choices, parents completed the Plant Experience Questionnaire (PEQ, Wertz & Wynn, 2014a, 2014b), which assessed infant's prior plant-related experiences along 6 different items (see below for all items on the PEQ). For instance, parents were asked (in German) "*How often do you name plants for your child?*" and "*How often does your child interact with plants?*" Parents were asked to rate the frequency of the respective prior experience with indoor and outdoor plants, and within the last month and the last summer months, resulting in four responses per item. Responses were indicated on 5-point Likert scales, with 1 = "never", 3 = "sometimes", and 5 = "almost every day".

For the analyses, we followed Rioux & Wertz (under review) and summed ratings from the PEQ to result in four subscales. The subscales differ from the ones outlined in our preregistration, because the factor analysis of Rioux & Wertz (under review) was conducted after we had preregistered the study. One subscale comprises the responses to items 1, 2, 3 and 5 regarding experience with indoor plants. A second subscale comprises the responses to items 1, 2 and 5 regarding experience with outdoor plants. A third subscale comprises all responses to item 4. The fourth and final subscale comprises all responses to item 6. Values that were omitted by the parent were removed from the analyses. This meant that only N = 39 participants provided data for the subscale on indoor plants, because there was no data available for one participant.

Items assessed through the PEQ:

1 = Interacts with plants

2 = Parent names plants

3 = Sees parent around plants

4 = Eats from plants

5 = Tries to touch plants

6 = Parent prohibits from touching plants

Table S3

Descriptive Statistics for Infants' Scores on the PEQ

	Condition			
	Plant		Artifact	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experience with indoor plants	20.95	7.07	21.26	4.54
Experience with outdoor plants	19.15	4.73	21.65	5.91
Eats from plants	7.25	3.93	5.55	1.64
Parent prohibits from touching plants	7.7	1.84	8.3	3.05

Table S4

Kendall's rank-order Correlations between Infant's Scores on the PEQ and Proportion of Subtle Shape Cue Match Choices

	Condition			
	Plant		Artifact	
	<i>r_τ</i>	<i>p</i>	<i>r_τ</i>	<i>p</i>
Experience with indoor plants	-.14	.45	-.01	.97
Experience with outdoor plants	-.28	.12	.27	.15
Eats from plants	-.1	.6	.2	.31
Parent prohibits from touching plants	.03	.89	-.03	.86

S2. Study 1a

One alternative explanation to the conceptual relevance interpretation of the results of Study 1 is that there were additional, unintended perceptual differences between the plant and artifact stimulus objects that might account for infants' choices. For instance, it may be that the stimulus objects were perceived as less similar to each other in the plant condition compared to the artifact condition. An imbalance in the similarity of the objects across conditions could have led to infants making fewer subtle shape cue match choices in the artifact condition.

To examine whether there was an unintended difference in the stimulus objects' similarity across the plant and artifact conditions, we conducted a stimulus validation study with adult participants (see e.g., Cimpian & Markman, 2005). We hypothesized that if the stimuli in the artifact condition were more similar to each other than the stimuli in the plant condition, then adults' similarity ratings for the stimulus objects should be higher in the artifact compared to the plant condition.

S2.1 Methods

S2.1.1 Ethical Approval

This study was approved by the ethics committee of the Max Planck Institute for Human Development.

S2.1.2 Participants

Participants were $N = 81$ adults (Median age: 31 years; Age range: 18 to 72 years; 51 female), who were recruited via the online platform Prolific.ac. Participants were pre-screened based on their current location in the UK, US or Ireland, which comprises most of the participants on Prolific.ac. Based on pilot data, we expected an effect of $Estimate = -0.87$ for the inclusion of the fixed effect of condition in the model. A power analysis conducted with the R-package *simr* (Green & MacLeod, 2016), estimated an average power of $1 - beta =$

.86, 95% CI [.84, .88] to detect effects of this magnitude with $N = 80$. Adults provided informed consent for their participation and were remunerated with 1 GBP.

S2.1.3 Procedure and Stimuli

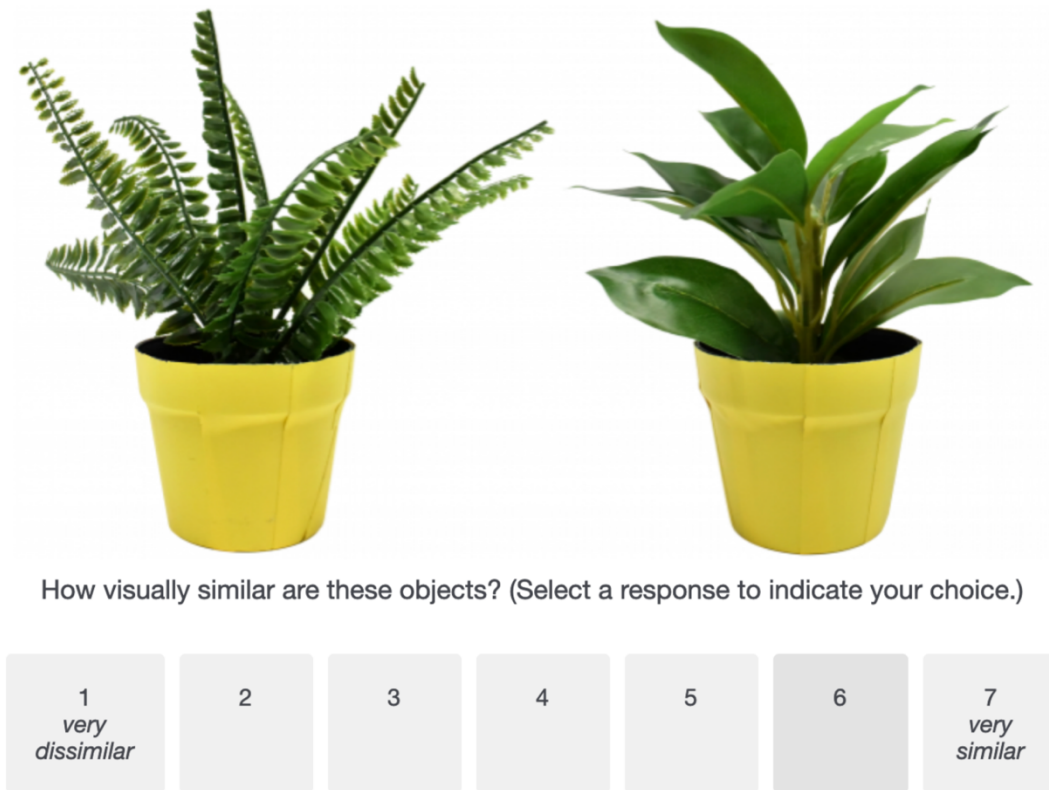


Figure S1. Example of the stimulus presentation in Study 1a.

Participants were randomly assigned to either the plant or artifact condition (between-subjects factor) and provided four similarity ratings, corresponding to the four pairings of target and pot or rod color match per condition of Study 1. For each similarity rating, two stimulus objects were displayed side-by-side (see Figure S1). and participants were asked to rate their similarity, focusing on the visual appearance of the objects (i.e., “How visually similar are these objects? Select a response to indicate your choice.”). Each stimulus pairing included one of the target objects (from the familiarization phase of Study 1) next to its respective pot or rod color match. Participants rated the similarity of the objects on a 7-point Likert scale with 1 corresponding to “very dissimilar” and 7 corresponding to “very similar”.

The items in each condition were split into two blocks, corresponding to each set, and the order of their presentation, as well as the placement of the target object (left or right) was counterbalanced. In addition, before beginning the study, adults were prompted to answer a screening item to detect careless responses (Oppenheimer et al., 2009). All participants answered the screening item correctly.

S2.2 Analysis and Results

Adults' similarity ratings were analyzed with a Generalized Linear Mixed Model with a Gaussian response term using the package lme4 (Bates et al., 2015) in R. Condition (plant or artifact), gender, participant age (z-transformed), and block order (z-transformed) were included as fixed effects. The model included a random intercept for participant, and set, as well as a random slope for block order on participant, and on set. Statistical significance was tested using likelihood-ratio tests comparing model fit between a model with and without the fixed factor of interest (Dobson, 2002).

Condition had no obvious influence on adults' similarity ratings, $\chi^2(1) = 0.054, p = .815$. Adults' similarity ratings were rather similar between the plant ($M = 3.98, SD = 1.39$) and artifact conditions ($M = 3.93, SD = 1.57$). There were no further effects of block order, $\chi^2(1) = 0.898, p = .343$; gender, $\chi^2(1) = 1.258, p = .262$, or age, $\chi^2(1) = 1.908, p = .167$, on adults' similarity ratings.

S2.3 Discussion of Study 1a

In this study, we tested whether there might have been an unintended perceptual difference between the plant and artifact stimuli that could have led to the stimuli in the artifact condition being perceived as more similar than the stimuli in the plant condition. Such a difference in the similarity of the stimulus objects could have biased infants' responses in Study 1 towards selecting the subtle shape cue match more often in the plant compared to the artifact condition based on low-level differences in similarity. If this were true, we would have expected adults' ratings of the visual similarity of the stimuli to be higher in the artifact

condition than the plant condition. Adults' similarity ratings, however, suggest that the stimulus objects' similarity was matched, at least to the degree that there was no obvious effect of condition on adult's similarity ratings.

S2.4. Model investigating Adults' Similarity Ratings in Study 1a

After fitting the models, we checked whether the assumptions of a normal distribution of the residuals were fulfilled by visual inspection of a QQ-plot (Field et al., 2012) and a histogram of the residuals, which revealed no obvious deviation from normality of the residuals. In addition, homogeneity of variances was checked by plotting the residuals against fitted values, which revealed no obvious patterns of a change in variance depending on the fitted values (Quinn & Keough, 2002, see Figure S2). Collinearity, determined for a standard linear model lacking the random effects, appeared to be no issue (maximum Variance Inflation Factor: 1.01, Quinn and Keough 2002).

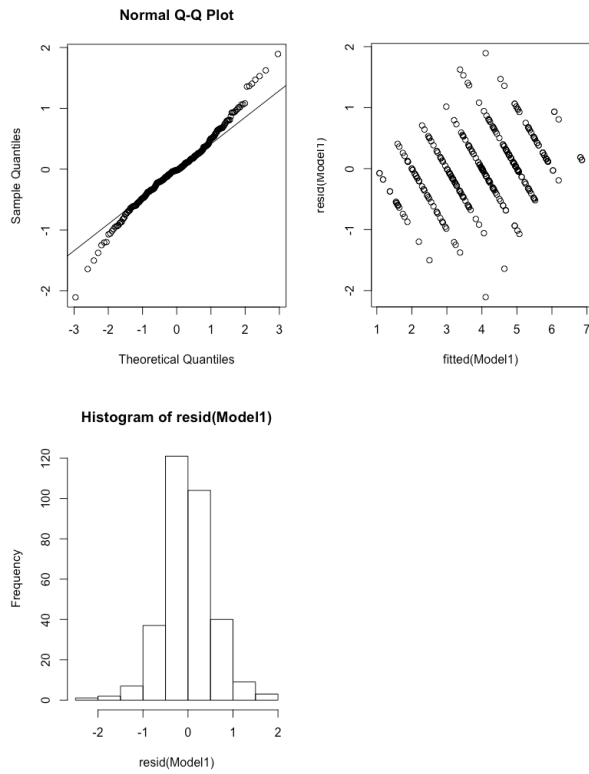


Figure S2. Diagnostic plots for the model of Study 1a. The top left panel illustrates the QQ-plot of the residuals. The top right panel provides a scatterplot of the model residuals and fitted values. The bottom left panel shows the histogram of the distribution of the residuals.

Table S5

Results of the Model investigating the Effect of Condition on Adults' Similarity Ratings in Study 1a

Term	Estimate	SE	CI lower	CI upper	χ^2	DF	<i>p</i>
(Intercept)	3.856	0.299	3.278	4.427			(1)
Condition	0.063	0.269	-0.461	0.571	0.054	1	.815
Order.z	-0.216	0.185	-0.556	0.106	0.898	1	.343
Gender	0.199	0.279	-0.336	0.752	1.258	1	.262
Age.z	0.187	0.135	-0.07	0.444	1.908	1	.167

(1) Not indicated because of having limited interpretation. Reference levels were set as follows: condition = artifact, gender = female

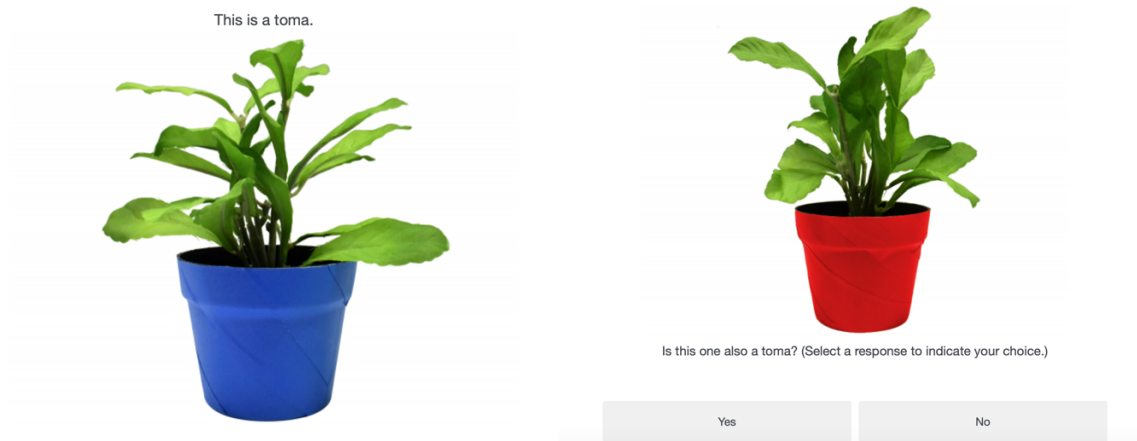
S3. Study 2

Figure S3. An example of the stimulus presentation in Study 2. Participants were asked to indicate for each subtle shape cue or pot / rod color match (right side; here the subtle shape cue match) whether or not it has the same name as the target object (left side). In Study 2, objects were presented on the same page.

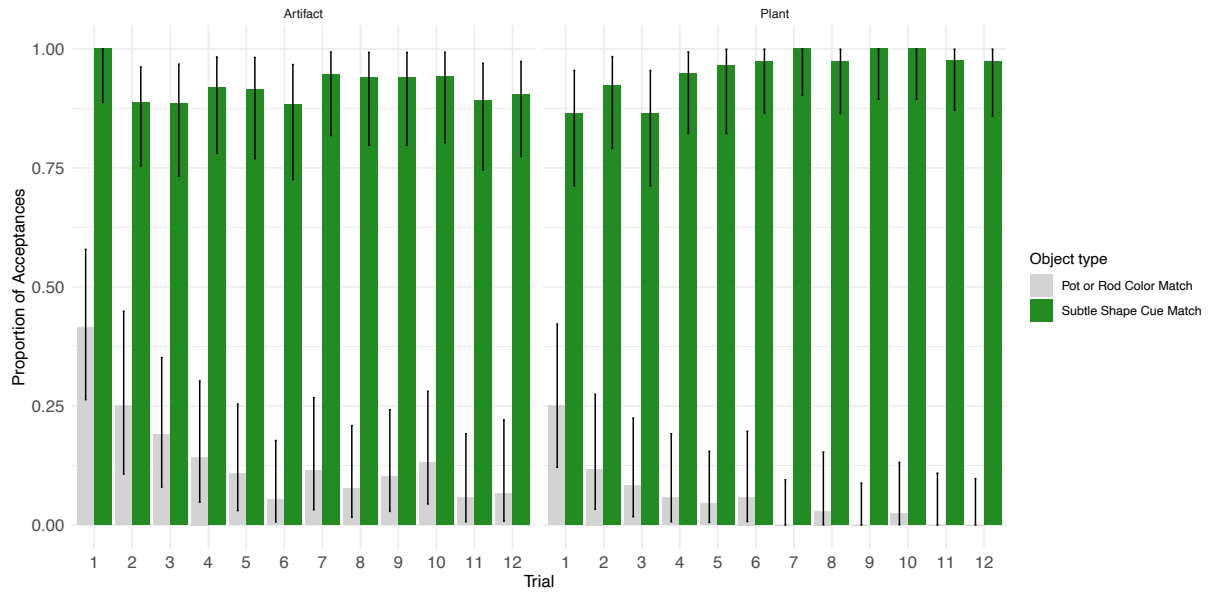


Figure S4. Figure illustrating the interaction of condition, object type and trial in Study 2.

Error bars show exact binomial 95 % Confidence Intervals.

S3.1. Models investigating Adults' Category Acceptance in Study 2

Table S7

Results of the Model investigating the Influence of the Interaction of Condition and Object Type on Adults' Category Acceptance in Study 2

Term	Estimate	SE	CI lower	CI upper	χ^2	DF	<i>p</i>
(Intercept)	-3.564	0.463	-7.024	-3.474			(1)
Condition	-2.083	0.62	-3.131	-0.826			(1)
Object.type	8.135	0.603	8.277	14.48			(1)
Trial.z	-0.357	0.179	-0.645	0.044	3.019	1	.082
Age.z	0.221	0.238	-0.236	0.685	0.865	1	.352
Gender(M)	-0.203	0.522	-1.098	0.779	0.152	2	.927 ^a
Gender(Neither)	-0.081	2.044	-3.772	3.16			
Condition:Object.type	3.474	0.784	1.769	4.721	24.518	1	<.001

(1) Not indicated because of having limited interpretation. Reference levels were set as

follows: condition = artifact, object type = pot or rod color match, gender = female; ^aindicates the overall effect of gender

Table S8

Results of the Model investigating the Influence of the Interaction of Condition, Object Type and Trial on Adults' Category Acceptance in Study 2

Term	Estimate	SE	CI lower	CI upper	χ^2	DF	<i>p</i>
(Intercept)	-3.435	0.462	-6.648	-2.928			(1)
Trial.z	-1.085	0.281	-1.934	-0.566			(1)
Condition	-3.102	0.915	-5.426	-1.864			(1)
Object.type	7.695	0.582	7.257	13.933			(1)
Age.z	0.282	0.25	-0.188	0.784	1.29	1	.256
Gender(M)	-0.264	0.543	-1.264	0.804	0.244	2	.885 ^a
Gender(Neither)	-0.297	2.141	-4.372	3.056			
Trial.z:Condition	-1.088	0.652	-2.607	0.232			(1)
Trial.z:Object.type	1.108	0.36	0.449	2.155			(1)
Condition:Object.type	4.847	1.118	3.227	7.701			(1)
Trial.z:Condition:Object.type	2.145	0.813	0.425	4.042	7.819	1	.005

(1) Not indicated because of having limited interpretation. Reference levels were set as

follows: condition = artifact, object type = pot or rod color match, gender = female; ^aindicates

the overall effect of gender

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