

“Word Learning” Interpretation Guide

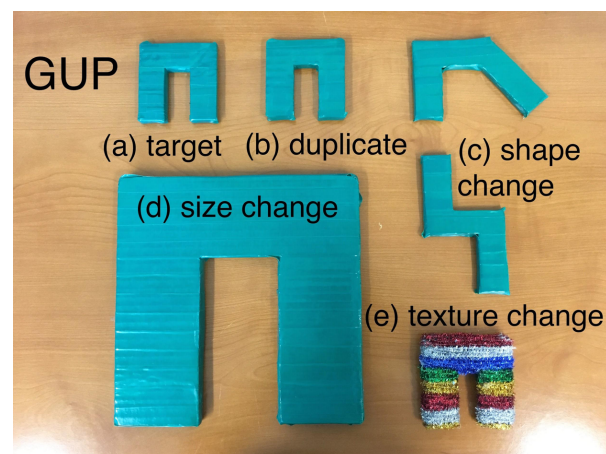
Word Learning is Smart: Exploring the Extension of Novel Words

Background:

Studies in word learning have shown that young children learn by tracking connections between words and what the object looks like. When learning new words, children weigh various factors such as shape, color, and texture differently, depending on their background knowledge of the object. When children extend a new word to something that is *animate* (e.g. an animal), they rely on shape and texture. So, they think only an object that shares the same form *and* texture (i.e., fur) as a “dog” should also be labeled with the word “dog.” In contrast, when children label new objects with a word that refers to something *inanimate* (like a rock), they pay attention only to whether the new objects share the same **shape**.

The “word learning” activity is based off Experiments 1 and 2 in Booth and Waxman, 2002, and selectively demonstrates two critical conditions: the original animate condition and googly artifact condition.

In their experiment, researchers created four sets of novel objects. In **Experiment 1**, researchers used a set of Gup and Riff without googly eyes and told a brief story about each target object that indicated the object was either animate or inanimate. In **Experiment 2**, researchers repeated the same procedure as Experiment 1, with the addition of googly eyes pasted on each set of the objects to visually appear animate. In the study, each child participated in only one condition out of the four. Each set of Gup and Riff consisted of 6 objects: the target (a), one duplicate match (b), two shape changes (c), one size change (d), and one texture change (e).



Experiment 1:

In the **original animate vignette**, the researcher presented the target object and told a brief story that indicated the object was animate (e.g., *Gup was really hungry, so Gup ate six candy bars.*) Then the researcher presented the duplicate object match, and asked the child whether the object was “a Gup.” The researcher then asked the child to make this judgment about each of the other objects in the set, individually.

In the **original artifact vignette**, the researcher presented the target object and told a brief story that indicated that the object was inanimate (e.g., *Danny used Riff to fix something in his yard, but Riff broke so Danny went to the store to buy a new Riff.*) Then the researcher presented the duplicate object match, and asked the child whether

the object was “a Riff.” The researcher then asked the child to make this judgment about each of the other objects in the set, individually.

Experiment 2:

In the **googly eye animate vignette**, the researcher followed the same procedure as the original, but all objects had googly eyes pasted on, so they also visually appeared animate.

In the **googly eye artifact vignette**, the researcher followed the same procedure as the original, but all objects had googly eyes pasted on, so they also visually appeared animate.

Researchers Found:

- In the **original animate vignette**, nothing about the object visually suggests the object is animate or inanimate. The brief story indicates the object is *animate*, so children extended the new word to only the duplicate and size change object.
- In the **original artifact vignette**, nothing about the object visually suggests the object is animate or inanimate. The brief story indicates the object is *inanimate*, so children extended the new word to the duplicate, size change *and* texture change object.
- In the **googly eye animate vignette**, eyes are glued onto the objects, which suggests that the objects are animate. The brief story indicates the object is *animate*, so children extended the new word to only the duplicate and size change object.
- In the **googly eye artifact vignette**, eyes are glued onto the objects, which suggests that the objects are animate. The brief story indicates the object is *inanimate*, and extended the new word to the duplicate, size change *and* texture change object. Although the eyes suggests animacy, this shows that children paid attention to the story and used the information to extend the new word.

These results confirm that preschoolers don't infer what a new word means based solely on what a labelled object *looks* like. In the study, children used the information they heard from the story about the new object to label the distractor objects.

Preschoolers can use rich background information to complement or even override an object's visual appearance when they're figuring out what a new word means.

Why is this important?

As educators, we want to gain insight to how children learn new words. Parents and educators might think that children learn new words by associating a new word based on similarity in shape between a known object and a new object. For example, when deciding whether other objects should also be labeled with a word like “dog,” children pay attention to both whether the new objects have the same form as dogs, but also whether they have the same texture (i.e., fur). Thus, they can use a wide variety of conceptual (instead of merely visual) cues to understand the extent of a new word's meaning.

Method:

Recruiting methods:

Introduce yourself to parents, explaining to them that you are demonstrating a study that looks at how children learn new words. Ask their child if they would like to play a game with fun toys.

Important notes:

If children are young (2-3 year old), do only the original animate condition, and don't ask confirmation questions in the vignette. If children don't identify the duplicate object as the target object, do only the first condition.

It may be helpful to hold on to the target objects when presenting the objects to prevent them from getting distracted.

Activity Instructions (the "study method"):

****Please reference 2.1.3. Procedure of the original study (Booth & Waxman, 2002, B14-16)****

Original Animate Vignette

1. Place target Gup on table and say:
 - a. *"Wow, look at this gup! You know what? I have something very special to tell you about this Gup. Do you want to hear it? Listen carefully now because I am going to ask you some questions about what I say. This Gup is usually very hungry. One day when it was walking through the forest, this Gup found 6 candy bars. Can you believe that? So where was this Gup walking when it found the candy bars? That's right! And it was so happy when it found them that it jumped up and down and gobbled up all the candy bars. Ok, so what did the Gup do when it found the candy?"*
 - b. If child provides incorrect answer or says they don't know, provide correct answer. If child gets question right, praise child for correct answer! For younger children, no need to ask follow up question.
2. With target Gup visible, say *"Now I am going to show you some other things. Each one might be a Gup or it might not be a Gup. I need you to tell me if you think each one is a Gup or is not a Gup, ok? Do you think you can do that?"*
3. Present the duplicate Gup and ask *"Is this another Gup?"* Then, remove the duplicate Gup from view.
4. Present other Gups (size change, shape change, texture change) in a random order one at a time. With each of the new objects ask, *"Is this another Gup?"*, then remove from view. (predicted answers: duplicate: yes, size change: yes, shape change: no, **texture change: no**)

Googly Eye Artifact Vignette

5. Place target Riff with googly eyes on table and say:
 - a. *"Wow, look at this Riff! You know what? I have something very special to tell you about this Riff. Do you want to hear it? Listen carefully now because I am going to ask you some questions about what I say. Danny usually keeps this Riff in his basement. But one day Danny took it outside because he needed to use it to fix something. Now why did Danny take this Riff out of the basement? That's right, and when his Riff got worn out*

doing the job, Danny went to the store and bought a new one. Ok, so where did Danny go to buy a new Riff?

- b. If child provides incorrect answer or says they don't know, provide correct answer. If child gets question right, praise child for correct answer!
6. With target Riff visible, say *"Now I am going to show you some other things. Each one might be a Riff or it might not be a Riff. I need you to tell me if you think each one is a Riff or is not a Riff, ok? Do you think you can do that?"*
7. Present the duplicate Riff and ask *"Is this another Riff?"* Then, remove the duplicate Riff from view.
8. Present other Riffs (size change, shape change, texture change) in a random order one at a time. With each of the new objects ask, *"Is this another Riff?"*, then remove from view. (predicted answers: duplicate: yes, size change: yes, shape change: no, **texture change: yes**)
9. Praise child for playing the game and talk with the child's parent about what the original researchers were studying, and discuss with parents the results the researchers found.

Activity Tips (e.g. what to observe as child plays, discussions to have with parents)

Help parents observe:

- What properties does the child use to identify the target object, the shape, size, or texture?
- Does the child understand that the eyes suggest animacy?
- Does the child understand what each story indicates about the target object?

Keeping kids interested:

- Remind children that they will be able to get a sticker/prize at the end of the activity!
- Be enthusiastic when telling them the story and showing them the new toys!

Results of Original Study

- For both the original Gup and googly Gup, children in the animate condition extended novel labels on the basis of both shape and texture, which means children agreed that the "size change Gup" was a Gup, while the others were not. This makes sense when you think about learning about what the words for animate things like animals refer to - both the shape of the animal *and* its "texture" (e.g., fur, scales...) are critical to its identity!
- Children in the artifact condition extended the new words to all the objects that shared the same shape as the original, regardless of whether the texture had changed. This also makes sense when you think about how much less important texture is than shape for inanimate objects (a pink plastic hammer is still a "hammer"!).

Questions Parents May Ask

Q: *What is the appropriate age?*

A: The original study looked at children between the ages of 3-4; however, since this is just a demonstration of the study, children of any age are welcome to participate!

Q: *What were the results from the study?*

A: The results show that children paid attention to what the experimenters *said*, as opposed to just the appearance of the items (e.g., that they had eyes) in determining the meaning of the new words.

Q: *Where can I get more information on this study?*

Give parents the insert for this study, which has ideas for exploring related concepts in the museum and at home.

Direct parents to <http://www.psychology.northwestern.edu/research/> and

<http://lcdlab.berkeley.edu/> to learn more about current research in language and child development.

Activities for Parents to Try at the Museum:

- Ask children to teach you about the underwater creatures in Bay Hall - what do they call specific animals they don't know the words for yet (e.g., do they call all underwater animals "fish" or do they combine other words: snake+fish = eel)?
- Play sorting games with the blue blocks in front of Discovery Hall, or the materials in the Art Studios or Fab Lab - what is your child paying attention to in grouping objects (e.g., shape, color, texture, function)?
- Use translations on museum plaques to start a conversation with your child about other languages (do they know what language they speak? Would they be able to understand someone speaking another language? Why or why not? What makes languages different? What languages would they like to learn?).

Activities for Parents to Try At Home:

- Teach children names to objects they may not know, show them a similar object and ask what is the name of the new object?
- Explain, explain, explain! Children are always constructing new hypotheses for what words mean, and they can use conceptual or linguistic information like the stories in this study to help them identify which is correct.
- Pay attention to the mistakes they make - children are very sophisticated learners, and often their mistakes in language reveal how they're interpreting the world, and the aspects of words' meanings that they're still working on mastering.
- When you come across unfamiliar words reading books together at home, encourage your child to think of what that word might mean based on the rest of the sentence and story around it (a.k.a. using "context clues"), before telling them what it means.

References:

Booth, A.E., & Waxman, S.R. (2002). Word learning is "smart": Evidence that conceptual information affects preschoolers' extension of novel words. *Cognition* 84, B11-B22.