JoVE: Science Education
Measuring Children's Trust in Testimony
--Manuscript Draft--

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Psychology Education Title: ~~Who Do You Believe?~~ Measuring Children's Trust in Testimony

Overview:

How does a person learn about the world around them? One way is through direct observation and exploration. However, not every piece of information can be observed firsthand. Instead, a person must often rely on other people as information sources. This is particularly true for children who have so many questions about the world around them, yet have limited means of accessing the answers. Thus, children must rely on other people to provide answers to their questions ~~(Figure 1)~~.

There is a popular viewpoint that children are gullible and that they believe everything they hear. However, recent research has shown this is not the case. Children as young as age 3 evaluate what other people say and show selective trust in other people's testimony. Children pay attention to and use their knowledge about an individual's prior behavior and characteristics to judge whether that individual is a trustworthy informational source.

This video demonstrates how to measure children's trust in testimony based on methods developed by Birch, Vauthier, and Bloom (2008) and Koenig, Clement, and Harris (2004).

Procedure:

1. Recruit 3- and 4-year-old children who have normal vision and hearing. For the purposes of this demonstration, only one child is tested. Larger sample sizes are recommended when conducting any experiments.

2. Gather the necessary materials.

   2.1. Obtain two hand puppets clearly distinguishable from each other.

      2.1.1. In this demonstration, use two male puppets with different facial features and clothing.

   2.2. Gather four common objects familiar to young children.

      2.2.1. In this demonstration, use a car, a spoon, a ball, and a cup.

   2.3. Obtain six novel objects not familiar to young children.

3. Data collection procedure.

   3.1. Introduction.

Comment boxes (margin):

Commented [DR1]: From JoVE 4/13:
- Figure Usage: The inclusion of photos (Figures 1 and 3) is not necessary.
- Question: Can you list what novel objects will be used in this experiment?
- References: Two references are included in the Applications section and need to be added to the References section.

Commented [JR2]: "Who Do You Believe?" can probably be removed from the title. "Measuring Children's Trust in Testimony" seems sufficient.

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Commented [JS4]: Can you list what novel objects will be used here?

Commented [JD5R4]: These objects don't really have names. Some of them are pieces of colored pieces of plastic that are parts of other toys (like a beach toy). The others are unusual household items, like a clip to hold bags closed, or a pad to keep table legs from scratching the floor.

3.1.1. Introduce the child to the puppets by saying, "I brought a bunch of fun things with me today, and I also brought two puppet friends: Ben and Tom."

3.1.2. Introduce each puppet to the child by acting as the puppet and saying: "Hi, I'm Ben/Tom. What's your name? [Child responds.] Nice to meet you, [child's name]."

3.2. History phase.

3.2.1. Set the four common objects on the table in front of the child and say: "Let's show these things to Ben and Tom. We'll let them talk now, and we can watch and listen."

3.2.2. Have each puppet label each of the objects.

3.2.2.1. Have one puppet label all four objects correctly. For example, for the ball, the puppet says: "I think that's a ball. Yes, that's a ball."

3.2.2.2. Have the other puppet label all four objects incorrectly. For example, for the ball, the puppet says: "I think that's a horse. Yes, that's a horse."

3.2.3. Make sure that Ben always goes first. For half of the children, Ben is the accurate puppet, and for the other half, Ben is the inaccurate puppet.

3.3. Test phase.

3.3.1. In this phase, present a pair of novel objects to the children, followed by conflicting information about the objects' labels.

3.3.2. Place two novel objects on the table.

3.3.3. Turn to one puppet (Ben) and say: "Look, Ben. What's this?" and pick up one of the objects. Have the puppet respond: "I think that's a blicket. Yes, that's blicket. Do you see the blicket?" and look at the child. Place the object back on the table.

3.3.4. Turn to the other puppet (Tom) and repeat the question, while picking up the other novel object. Have the puppet respond in the same way as before, labeling it a blicket. Place the object back on the table.

3.3.5. Put down the puppets, and then the experimenter closes their eyes, holds out their hands, and asks the child: "Can you give me the blicket?" Note which object the child chooses.

3.3.6. Repeat this procedure two more times with different sets of objects and different words ("truly" and "modi").

3.3.7. Counterbalance the specific objects named by each puppet between subjects.

3.4. Confirmation phase.

3.4.1. In order to confirm that children were familiar with the objects used in the history phase, place the four common objects from the history phase on the table again and ask the children, "What is this?" Record the responses.

4. Data analysis.

4.1. First, calculate the number of correct responses children provide in the confirmation phase. Exclude the children who perform poorly in this phase from further analysis, as they would not have recognized that the puppets differed in accuracy.

4.2. Calculate a score of 0-3 based on how many times the children chose the object that the accurate puppet named in the test phase. For the purpose of discussing and illustrating the results, convert these scores to percentages out of 100.

4.3. Compare the children's scores on the test phase to chance (score of 1.5) using a one-sample t-test.

4.4. Compare the children's scores across age groups using an independent-samples t-test.

Representative Results:
Researchers tested 20 3-year-old and 20 4-year-old children and found that children showed greater trust in the accurate puppet. Children were 100% accurate naming the familiar objects in the confirmation phase, suggesting they were capable of recognizing which puppet had been accurate in the history phase. The researchers found that children in both age groups chose the objects labeled by the accurate puppet at rates significantly higher than chance (75% of the time for 3-year-olds and 70% of the time for 4-year-olds; **Figure 1**). There were also no differences between 3- and 4-year-olds, suggesting that children in both age groups could use their observations of the puppet's prior accuracy to make judgments about which puppet was reliable, even when the puppets were naming unfamiliar objects.

Applications:
The finding that children as young as age 3 show selective trust in information sources has important implications for how children learn about a wide range of topics. For example, when learning about the concepts underlying scientific fields, such as chemistry and biology, children typically cannot observe facts, like "There is oxygen in the air" or "Living things contain DNA,"

themselves. Instead, they must rely on the testimony of other people, such as parents and teachers, and determine whether the information they receive is likely to be accurate. The same is true for learning concepts related to history (*e.g.*, George Washington was the first president) or religion (*e.g.*, God created the earth). The research on children's trust suggests that, on the one hand, children as young as 3-years-old are capable of learning from more knowledgeable individuals, yet on the other hand, they keep track of how accurate the individual providing the information is likely to be and do not believe everything they hear.

Research has found that young children are also capable of making judgments about where to seek out information about different topics. They are more likely to direct questions to a previously knowledgeable individual (*e.g.*, Koenig & Harris, 2005), and they understand that some people are experts on certain topics but not others (*e.g.,* Lutz & Keil, 2002). Children can think critically about information sources and where to find the answers to their questions, and they have a grasp of how knowledge is organized in other people's minds well before they begin their formal education. Educators and parents can capitalize on children's intuitive understanding of knowledge and expertise by providing consistently accurate information. They can also help further children's understanding by talking to them about what makes information trustworthy or not.

Legend:

Figure 12: Mean percentage of trials where children chose the object labeled by the individual who was previously accurate at labeling familiar objects.

References:

Birch, S. A., Vauthier, S. A., & Bloom, P. (2008). Three- and four-year-olds spontaneously use others' past performance to guide their learning. *Cognition*, *107*, 1018–1034.

Koenig, M. A., Clément, F., & Harris, P. L. (2004). Trust in testimony: Children's use of true and false statements. *Psychological Science, 15,* 694–698.

Koenig, M. A., & Harris, P. L. (2005). Preschoolers mistrust ignorant and inaccurate speakers. *Child Development*, *76*(6), 1261-1277.

Lutz, D. J., & Keil, F. C. (2002). Early understanding of the division of cognitive labor. *Child Development*, *73*(4), 1073-1084.

Commented [JS6]: Please include these 2 references in the References section.

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Commented [JR8]: Figures 1 and 3 are suggested stock photos from the author(s). If desired, both of these images can be downloaded (or removed).

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