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Memory Development: Demonstrating How Repeated Questioning Leads to False Memories

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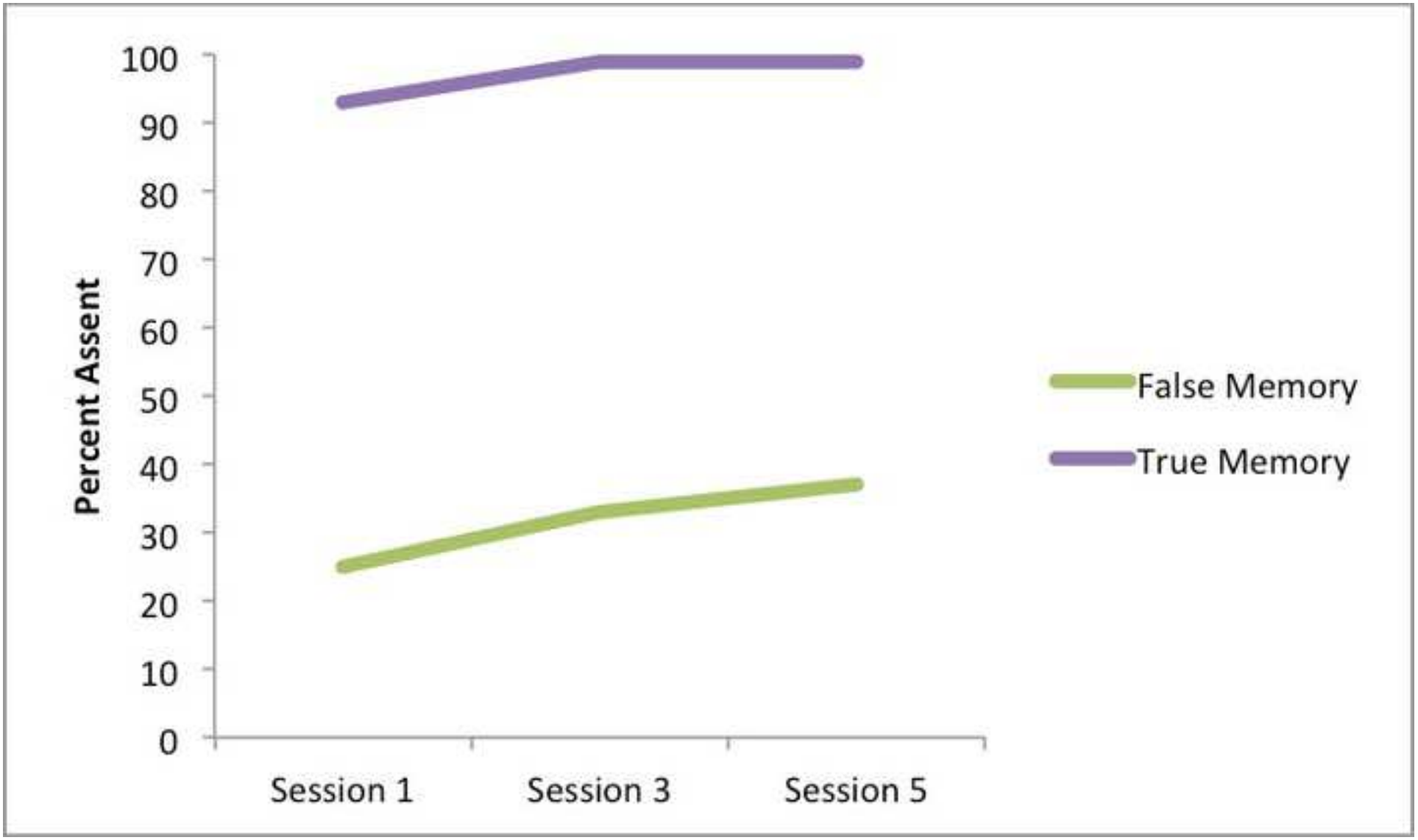
Photo or Graphic File

Click here to download Photo or Graphic File: Noles and Danovitch_Memory Development_Figure 1.jpg



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Psychology Education Title: Memory Development: Demonstrating How Repeated Questioning Leads to False Memories

Commented [DR1]: From JoVE 4/13:
- Figure Usage/Clarity: The inclusion of a photo (Figure 2) is not necessary.
- Also, please expand the caption for Figure 1 so that it can be interpreted on its own.

Overview:

A person is defined as a unique individual based on the people and events they encounter in their lives. Thus, creating, storing, and recalling memories are essential elements of the human experience. However, memory, as adults experience it, takes time to develop. Although young children can learn facts and remember details of their lives from moment-to-moment and day-to-day, they do not create autobiographical memories or detailed memories of events that happen in their lives until age three or older.

Even after age three, children's memories differ from those of adults in important ways. Children are less effective at evaluating their own memories than adults, which makes it difficult for them to determine, for example, whether or not their memories are accurate. False memories are a problem for both children and adults, as it is quite easy to create a false memory with a poorly-worded question or a story repeated over and over. However, ~~but~~ young children are more susceptible to creating false memories than either older children or adults.

This video demonstrates children's vulnerability to false memories using a method developed by Steven Ceci and his collaborators.

Procedure:

1. Recruit approximately 50 healthy 5- to 6-year-olds with no history of developmental disorders. For the purposes of this demonstration, only one child is tested. Larger sample sizes are recommended when conducting any experiments.

    1.1. Note that the large sample size is to account for attrition or loss of participants. This procedure uses a longitudinal, multi-session design that requires children to complete a specific number of interviews in a specific amount of time. Any children who miss a session must be excluded from data analyses.

2. Data collection.

    2.1. Gather the necessary materials.

        2.1.1. Interview the child's parent to identify events the child has and has not experienced in the last 12 months.

        2.1.2. Design 10 vignettes, including 5 true events, 3 check events, and 2 test events.

2.1.2.1. Record true events that consist of actual events the child experienced in the previous year as reported by their parents. Determine the general accuracy of a child's memories with these events.

2.1.2.1.1. Example: "You went to Disney World and ate a turkey leg."

2.1.2.2. Create check events that consist of events the child has not experienced. These events provide another measure of children's accuracy, and they also provoke children to say "no" to some events, so they don't get into a habit of just answering "yes" to every question.

2.1.2.2.1. Example: "You saw a baby alligator eat an apple on an airplane."

2.1.2.3. Create test events that consist of believable events the parents report their child has not experienced. These are the events that may or may not generate false memories.

2.1.2.3.1. Example: "You went to the hospital, because your finger got caught in a mousetrap."

2.1.3. Print each event on an index card.

2.2. Introduction.

2.2.1. Say to the child, "I am going to read some things that may have happened to you, and I want you to think real hard about each one of them. Try to remember if it really happened. We made this list up by talking to your mother and father to get them to tell us about things that really happened to you when you were younger, but not all of the things I am going to read to you really happened."

2.3. Test.

2.3.1. Sit near the child while holding the event index cards.

2.3.2. Have the child select a card at random, and then read it to them.

2.3.3. After reading, ask, "Did that happen?"

2.3.4. Continue until all the cards have been read.

2.3.5. Repeat this procedure 5 times over 5 weeks.

2.3.6. Record the child's responses, and then transcribe them for future analysis.

3. Analysis.

3.1. For each session, code the child's "yes" responses separately for true events and test events.

3.2. Use an ~~paired samples t test~~ANOVA to determine if there are differences between the two types of events presented to the child in sessions 1, 3, and 5.

Commented [JS2]: Technically, to compare data across 3 sessions here, a two-way ANOVA is used.

Commented [NN3]: That is correct. I initially designed this example to have only two sessions, and I failed to update the key analysis after making the change to three sessions.

Representative Results:

Children presented with real events and unrealistic events from their lives are typically very accurate at identifying situations they have and have not experienced. However, when presented with realistic events they have not experienced, many preschoolers believe they experienced those events, even after only hearing about them once, and the rate at which they say they have experienced them increases over time (**Figure 1**). In addition to the data from children's responses, children may also spontaneously add their own details to the false memories presented to them in earlier testing sessions.

Applications:

Memories are not perfect representations of life events. They degrade over time, and details can be added or subtracted. Remembering is more like construction than recollection. So, it is very easy for a person to mistake something they have heard before or something they've have thought about before for something that they've actually experienced. This is especially true for children, who are particularly likely to form false memories when asked to think about or imagine situations or events. More generally, these findings indicate that people should take special care when questioning children about serious legal and personal matters. Children are typically questioned repeatedly and with very specific questions when they are interviewed, and parents, teachers, social workers, and law enforcement officials commonly employ these practices ~~(Figure 2)~~. Thus, there is a delicate balance between creating false memories and effectively provoking children to report what they know about important events.

Legend:

Figure 1: ~~Assent data by age and event type~~Average percentage of children who say ~~that~~ they experienced an event that happened to them (true memory) or did not happen to them (false memory) after 1, 3, or 5 sessions.

Commented [JS4]: Please expand the caption to include relevant information so that the figure can be interpreted on its own.

References:

Ceci, S.J., & Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children's testimony*. Washington, DC: American Psychological Association.

Ceci, S.J., Crotteau Huffman, M.L., Smith, E., & Loftus, E.F. (1994). Repeatedly thinking about a non-event: Source misattributions among preschoolers. *Consciousness and Cognition, 3*, 388-407.