Observational Coding Assignment
Instructions for doing the assignment

Following this page you will find a description of the assignment on observation coding. To do this assignment you will need to click on the link provided on the intranet (I will not post this link on the class webpage, for security reasons) to access the digitized videotape files of the six subjects to code. These files can be played using either RealPlayer or Windows Media Player (and I believe they play in the latest version of WinAmp as well), so there should be no problems in seeing any of the files. If you do not have any of these programs installed on your computer I would suggest downloading RealPlayer (which is free) and installing the program.

Please note that you will need a partner for this assignment (see the next page, the question dealing with calculations of reliability).
Observational Coding Assignment
Overview

The purpose of this assignment is to give you practice in (1) doing an observational coding of infants’ behavior in an actual experiment; (2) calculating reliability for your coding, using one of the methods described in class; and (3) communicating the nature of this coding system and calculation of reliability to a reader. To accomplish these goals you will watch a series of short digitized videotaped sessions of an experiment investigating infants’ abilities to use a tool (a hook) to recover a toy. I have attached a document giving a brief overview of the background for this study, along with a rationale for the experimental conditions tested. This document is intended to give you a better sense of why the experiment was conducted, as well as what it is that the researcher thought he/she might find in this experiment.

Your assignment for this work is as follows:

1. Code the tool use behavior (using a coding scheme described below) of a set of 6 infants (two 8-month-olds, two 12-month-olds, two 16-month-olds). You will use the attached coding sheet for your observations, and turn in this sheet with your assignment.

2. Code the attention time (based on the description of attention time given blow) for these same infants. You will also include your attention time measures on the coding sheet given with this information.

3. Calculate reliability for your behavioral codings based on your and a partner’s observations. You will turn in the calculation of this reliability coding. Your partner must be someone from PSYC26. When you turn in your reliability calculations, please make sure to give me the name, student ID, and lecture section of your partner. Any analysis or discussion of your actual coding values that choose to include in your write-up (see below) should be based on YOUR data set, and not on your partner’s data set.

4. Write up a BRIEF description of your coding activities, as would be appropriate for a data coding subsection of a methods section using APA format. Please note – I am NOT asking you for a results section, or any form of analysis of the data. I am interested in your activities during coding of this data.
Observational Coding Assignment
Background of the study

Piaget (1952) states that children, rather than passively waiting to take in information from their environment, continuously and actively seek out information and adapt it to the knowledge they already have. In this way, they construct a view of reality from their own experiences, developing cognitive structures and processes that form the basis for the comprehension of their environment and their response to it. This leads to the hypothesis that infants’ perceptual knowledge may be developmentally preceded and informed by their action (Schlesinger & Langer, 1999). With regards to tool use, infants would be able to use a tool properly before they can perceptually discriminate a possible tool use from an impossible one.

This hypothesis and Piaget’s emphasis on experience learning are contradictory to a neonativist approach. According to neonativist ideas infants are innately endowed with a complete set of representational knowledge about physical phenomena (Carey, 1985; Leslie, 1988; Spelke, Breinlinger, Macomber & Jacobson, 1992). According to this view, cognitive development is a maturational process or, in other words, a process that gradually unfolds one’s innate capacities. Accordingly, a neonativist would argue that perceptual aspects of knowledge have to appear earlier than actions, reflecting that knowledge (Schlesinger and Langer, 1999), and that similarly infants would be able to discriminate proper versus improper tool use before sufficient motor skill and other necessary abilities allow them to use tools properly.

The two hypotheses predicted by the Piagetian theory and Neonativist’s principle contrast with each other. One predicts that perceptual aspects would appear first whereas the other one predicts the opposite. In attempt to resolve the contradictory predictions of these theories, Schlesinger and Langer (1999) conducted a study investigating action-perception abilities of infants from eight to twelve months using simple tool use tasks. The results of their study showed that although the emerging ages for the tool use of a cloth and hook were different, they were consistent in one important aspect – for both tools, there was a lag between the development of the action aspect of tool use and the development of the perceptual aspect of tool use, with infants able to use the tool properly before they could discriminate the possible tool use events from the impossible tool use events perceptually. These results thus support the Piagetian or constructivist theory, and argue against neonativist theory.

Although the results of both cloth and hook tasks suggests that the action aspect of tool use develops earlier than the perceptual aspect, these results should be interpreted cautiously. In this study, tool use behaviors were classified into three increasingly sophisticated stages: subjective, transitional and objective tool use. According to the author’s explanation, in the subjective stage, infants do not use the tool to retrieve a goal-object. Infants in this stage may just play with the tool or ignore it while reaching for the goal-object. In the transitional stage, infants successfully use the tool to retrieve the goal-object, in this case, by pulling the tool. However, infants apply the same strategies in attempting to retrieve the goal-object even the object is placed outside of the functional
part of the tool. Finally, during in the objective tool use stage, infants not only successfully retrieve the goal-object when the spatial relation between the tool and the object are appropriate, but they also shift to other strategies when the tool use is not an efficient means. Alternative strategies include ignoring or discarding the tool or asking for assistance. Infants at this final stage are thought to be competent in using the tool. In Schlesinger and Langer’s (1999) study, in order to be identified as using a tool objectively infants had to pull the cloth or the hook when the object was on the cloth or inside the crook of the hook, but could not use the tool when the object was outside the crook or off of the cloth.

For the cloth task, this coding system is sensible. During the contact trials, by pulling the cloth toward themselves infants would be able to retrieve the out of reach object. However, applying this strategy to non-contact trials would not enable infants to achieve their goal because the object, which is off of the cloth, would not move closer to infants. Therefore, to retrieve the goal in this case infants should employ an alternative strategy. For the hook task, however, this scoring system is potentially too lenient. In the study, infants were judged to be objective tool users only when they pulled the hook with the object inside of the crook, and did not pull the hook when the object was outside the crook. Although this makes the coding and scoring system equivalent for the cloth and hook conditions, it ignores the fact that when the object is outside of the crook, infants can actually move the hook toward the object to try and place the object inside of the crook. As such, infants could then still use the hook to retrieve the object without resorting to other strategies, with this behavior indicating that infants understood that the spatial relations between the hook and the object could be manipulated by merely moving the hook. Ultimately, what this means is that Schlesinger and Langer might have overestimated the abilities of the infants to use a hook, and also overestimated the development of the action aspect of tool use of the hook. Such overestimations could then have led them to claim that action aspect of tool use develops earlier then perceptual aspect in the hook domain.

The present study was devised to address and investigate this argument, investigating a number of different aspects. First, this experiment employed a stricter scoring system, in an attempt to avoid overestimating infants’ abilities. Second, this experiment extended these previous findings by looking at infants’ tool use abilities when the tool was truly inappropriate for performing certain task. To accomplish this goal, an additional condition was introduced in which the length of the tool was varied. Specifically, long and short versions of the tool were presented in different trials while the goal-object was be placed at the same distance beyond the infants’ reach. To be able to perform the task properly, infants have to understand the relation between their distance from the goal-object and the effective length of the tool. They should use the tool during the long tool trials and retreat to other means during the short tool trials. Finally, this study extended the age range of these investigations, exploring the abilities of 16-month-old infants as well as 8- and 12-month-olds.

References


Observational Coding Assignment
Explanation of conditions

**Age manipulation:** There are a total of six subjects for you to code – two 8-month-olds, two 12-month-olds, and two 16-month-olds. These different age groups are designated by the first one to two digits of the subject number in the names of the videotaped files of the experimental session (e.g., the videotape named TOOLSAP_806.wmv shows the 8-month-old subject #06, whereas the videotape named TOOLSAP_1207.wmv shows the 12-month-old subject #07).

**Experimental manipulation:** Each infant in this study participated in three different experimental conditions. Here is a brief explanation of the three conditions:

- **HLI condition** (which stands for Hook, Long Inside): The to-be-recovered toy is initially placed inside of the crook of the long hook prior to the infant’s being allowed to manipulate the hook to recover the toy.

- **HLO condition** (which stands for Hook, Long Outside): The to-be-recovered toy is initially placed outside of the crook of the long hook prior to the infant’s being allowed to manipulate the hook to recover the toy.

- **HSO condition** (which stands for Hook, Short, Outside): The to-be-recovered toy is initially placed outside of and behind the crook of a short hook prior to the infant’s being allowed to manipulate the hook to recover the toy.

Each of the three conditions is presented twice to each infant, in different orders, meaning that each infant has six possible trials in all.
Infants’ behavior in response to the six trials was coded in two ways.

**Behavioral coding**: The first method involved coding the infant’s behavior with the tools, attempting to categorize the level of the infant’s sophistication in using the tool to recover the toy. Ultimately, each infant’s behavior was given a score from 0 to 3, representing increasingly sophisticated levels of tool use. The assignment of the 0 to 3 score was based on looking for any one of a number of target behaviors. Because the different conditions required different tool actions, the actual behaviors looked for vary according to which condition is being examined. On the next page you will find a breakdown of the coding system, along with a description of the target behaviors looked for at each level of the coding system. Please note that for the HLI and HLO conditions, the categories 1 and 2 were further subdivided into two categories (a vs. b). For the HSO condition this subdivision was not necessary. For your purposes you can collapse across the a and b subcategories for the HLI and HLO conditions, and simply assign children a score of 0, 1, 2, or 3, based on your observations.

**Attentional coding**: The second method involved coding the degree of attention the infant showed towards the tools and the task at hand. This was done by timing (using a stopwatch or a simple clock with a second hand) the amount of time the infant spent attending to the task at hand. Examples of what counts as attention are listed on a subsequent page.
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<tr>
<th>Code</th>
<th>General</th>
<th>HLI</th>
<th>HLO</th>
<th>HS0</th>
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| 0    | • Ignore both the goal object and the tool  
      • Play with the tool for its own sake  
      • Look at the goal object, but make no attempt to obtain the goal | • Ignore both the toy and the hook  
      • Play with the hook for its own sake  
      • Look at the goal but make no attempt to get it | • Ignore both the toy and the hook  
      • Play with the hook for its own sake  
      • Look at the goal but make no attempt to get it | • Ignore both the toy and the hook  
      • Play with the hook for its own sake  
      • Look at the goal but make no attempt to get it |
| 1a   | • Achieve the goal accidentally | • While playing with the hook, the hook accidentally pulls the toy within reach | • Accidentally move the toy closer with the hook while looking away | • Try to reach for the toy using their hand  
      • Point at the toy  
      • Attempt to use the hook to get the toy |
| 1b   | • Attempt to obtain the goal using an impossible or wrong method | • Try to reach for the toy using the hand  
      • Hit the toy with the hook  
      • Flip the hook and use the wrong side of the hook  
      • Use the handle of the hook to try to get the toy | • Try to reach for the toy using the hand  
      • Wave the hook at the toy  
      • Poke the toy with the hook  
      • Hit the toy with the hook | |
| 2a   | • Achieve the goal, but it is unclear whether this is an intentional act | • Get the toy using the hook, but it is unclear whether this is an intentional act | • Get the toy using the hook, but it is unclear whether this is an intentional act | • Look back and forth at the toy and someone else (experimenter or mom) without indicating a clear desire for the toy |
| 2b   | • Attempt to obtain the goal using a possible or appropriate method, but unsuccessfully | • Pull the hook and the toy some, but not enough to get the toy | • Move the hook so that the toy is inside the crook  
      • Use the hook to bring the toy closer, but not enough to get the toy | |
| 3    | • Successfully accomplish the goal with clear intention | • Successfully obtain the toy using the hook with clear intention | • Successfully obtain the toy using the hook with clear intention | • Clearly signal that they want external help to get the toy  
      • Point at the toy while looking at the mom or the experimenter  
      • Point at the toy and yell  
      • Appeal to the experimenter (or mom) to get the toy for them |
Observational Coding Assignment
Coding Criteria (Attention Time)

Total Trial Time
- The amount of time that elapses between the green screen being taken away and the end of the trial (when the baby gets the toy or when the bell rings)

Attention Time
- The amount of time the baby was attending to the task
- Examples
  - Trying to use the tool to achieve the goal
  - Playing with the tool
  - Pointing at the toy/tool
  - Looking at the toy/tool
  - Holding the tool (even if the child is paying attention at something else)
  - If the child drops the tool but still stares at it the whole time or looks at the experimenter picking it up, it is considered as attending to the task
  - If the child stares at the toy and then glimpse at the experimenter briefly, it is still counted as continuous attention to the task. But if it is more than a glimpse, it should not be considered as attention
Subject Number: ____________________

Tool: ______ Hook _______ Age: ________________________________

Coder: ____________________________ Coding Date: ______________________

**Action - Score**

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**Action – Attention Time**

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General Notes: ___________________________________________________________
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