Bayley Scales of Infant and Toddler Development: IV Administering a Reliable Bayley for Research- Part II

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Disclosures and disclaimer

Disclosures

I served as a consultant to the Pearson Corp and Dr. Glen Aylward (Bayley IV author) during the development of the Bayley 4, primarily in 2017 and 2018; however, I am not currently receiving any financial compensation or support from Pearson or Dr. Aylward.
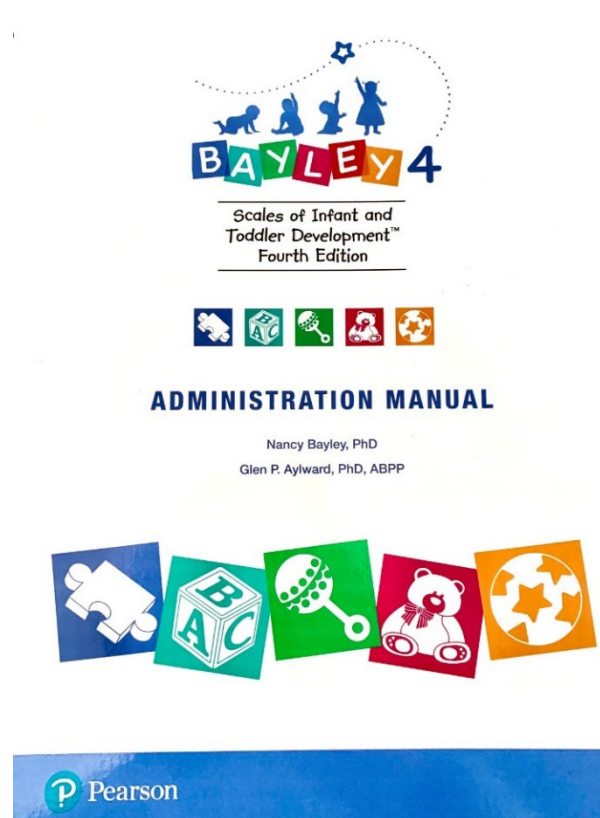
My interest in the use of the Bayley Scales assessment instrument comes from several decades of experience with this tool in research and clinical applications.

Disclaimer

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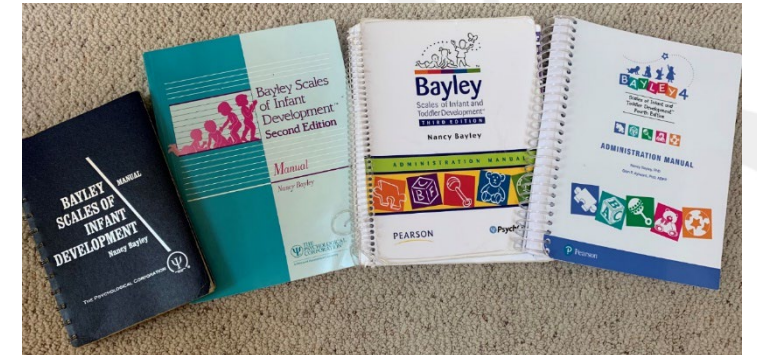
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Bayley Scales of Infant and Toddler Development – 4 (2019)

The Bayley Scales of Infant and Toddler Development

- Developed by **Nancy Bayley, PhD** (1899-1994)
  - Pioneer in field of human development-
    - much of what we know about development attributable to Dr. Bayley
  - Devoted life to study of lifespan mental and physical development
  - Received many scientific awards for her contributions
  - Bayley I – published 1969
- Bayley now in 4th Edition (published 2019)
  - All editions use standardized administration and scoring
  - Observed behavioral responses were used to develop age-based norms
  - Norms used for comparing a child's performance against peers
  - Bayley is *power test*
    - *Items/skills arranged in order of increasing difficulty*

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Standardized Assessment with the Bayley-4

Bayley MUST be administered according to standardized administration

- The Bayley – 4 is a *standardized test* and the norms/norm tables were established based on **uniform testing conditions**

- In order for the normative data to be utilized to obtain scores for any child, the Bayley administration MUST conform to those same *uniform testing conditions* (administered according to the procedures in Chapter 4)

- Deviations from the standard procedures, such as changes in the wording of instruction, layout of materials, or presentation of a test item will reduce the reliability and validity of the test results and the raw scores would not be interpretable using the nationally derived norms.

- **Thus, examiners MUST administer exactly according to manual**

Administering a reliable Bayley-4 for research

- Keep number of individuals in the room to a minimum

- Optimal - Child, 1 Caregiver, Examiner
  - Bayley 4 – Caregiver *very familiar* with child's skills is essential

- Acceptable – Child, 2 Caregivers, Examiner
  - Or one caregiver and one videographer
  - Or use iPad/video camera on tripod

- Not Acceptable – multiple other adults; siblings; observers; medical staff
  - Use one-way mirror, if available, for other adults/observers
  - Extra relatives should wait in waiting room

Preparing for Bayley-4 administration

Correct seating is crucial!

- Child may sit on parents lap at an adult sized table
  - Provided can sit comfortably on parent lap
  - Provided child can reach (not too high or too low)
- Child may also sit in a youth chair or booster
- May use a child-sized table and chair, provided examiner comfortable sitting at child table
- Child should NOT sit alone on an adult sized chair
- **Child should be positioned so table hits at mid abdomen so they can readily access and manipulate materials**

NO

Required Materials Provided by Examiner

- **Stopwatch** or use your phone (some disadvantages to phone)
- **Blue painters tape** – tape stepping path to floor
- **Tissues** – Cog 44-relational play; RL 21-follows 1-part directions
- **Food pellets** – Cheerios recommended
- **Object to hide behind -** Cog 24 - anticipatory gaze -Clipboard recommended (may not need for our study age)
- **Sheets of paper** – Cut in half for Cog 18- Plays with paper
- **Extra toys (can get from child if child brings anything**– for RL 13 (toys not used in RL 16)
    - Examples bottle/cup, pacifier, child shoe, phone, keys, etc.
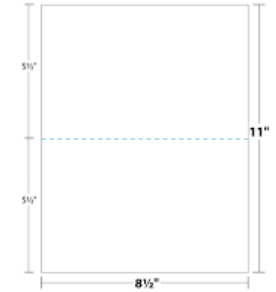
Required Materials provided by examiner: Stairs!
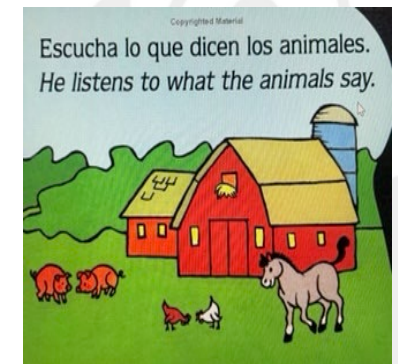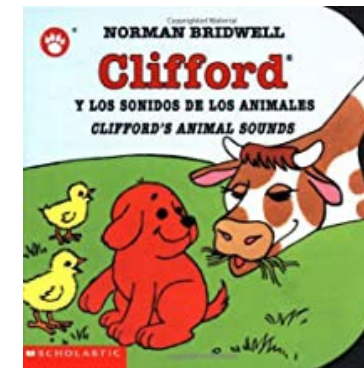
- **Stairs** – approximate 6 ½ inch rise and 10 inch run
  - May use stairs available in your facility
    - IF of appropriate size
    - MUST have handrail/wall for child to hold
  - Or construct set from manual page 16 and place against a wall

Figure 3.2   Dimensions of Constructed Standard Stairs
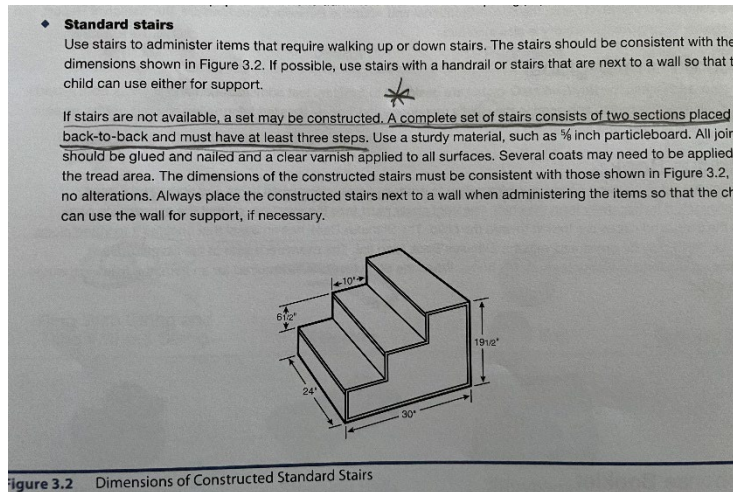
**Option: Modified single set if space is limited**

Additional Materials **Strongly** Recommended

- **Extra Objects/Toys –** for RL 13: Recognizes Words
  - "Ask caregiver to choose 5 objects the child is familiar with"
  - Can use toys from kit not used for other language items
  - Not much to choose from so have some other common objects available
  - Can use child's own objects – shoe, cup, bottle, etc.

- **Clifford Book written in Spanish**
  - Clifford's Animal Sounds
  - For Cog #41 Listens to story (parent reads)
  - Available at Amazon or other bookstores

- **Unsharpened** Ticonderoga Fat Pencil
  - For Cog #48 Uses pencil to obtain object

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Organize Test Kit and Materials in Advance of Administration

- Ideally, have test kit <u>out of child's sight</u>

- Organize test kit and arrange/set up materials BEFORE assessment begins
  - Assemble pegboard, pink puzzle; Duplo blocks, etc.
  - Open stimulus book to first page needed; keep it open for next item

- Store puzzle pieces, blocks, etc. in plastic containers (not bags) for ease of access and cleaning

- Use bins for used/dirty toys

- Clipboard for booklet and stopwatch ready

- NEVER wait to set up or dig through disorganized pile of toys during assessment or with child in the room – wastes precious minutes

- Items easy to lose –check kit regularly for missing items and re-order from Pearson
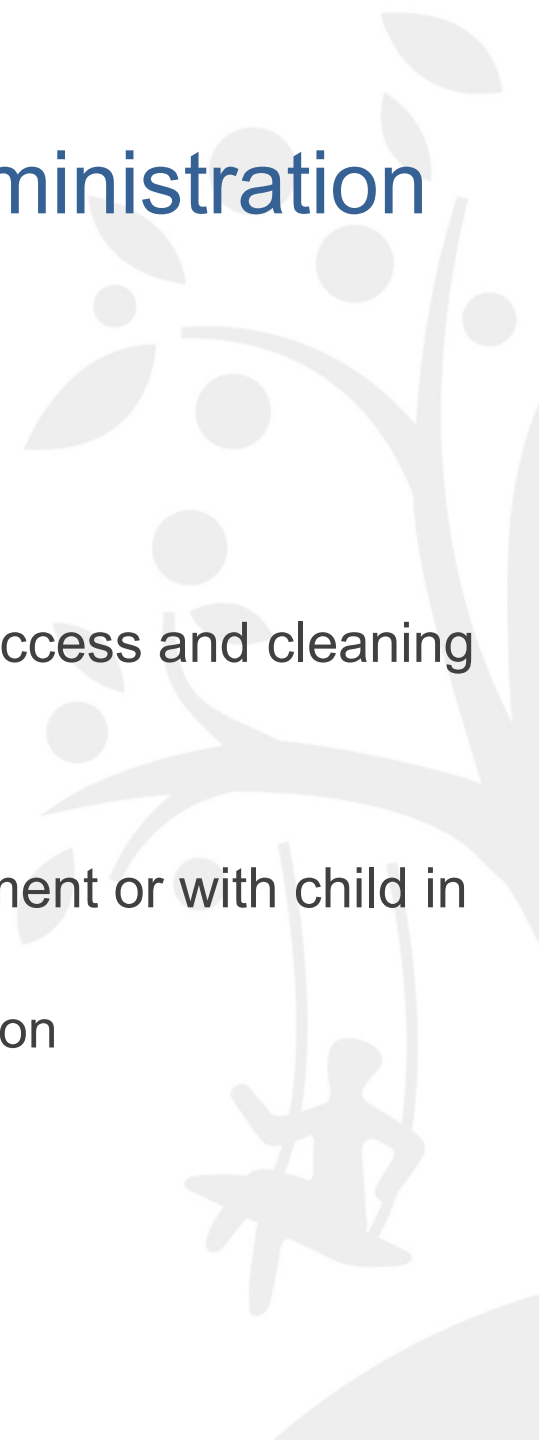
Examples of set up methods and options

Set up in open test kit

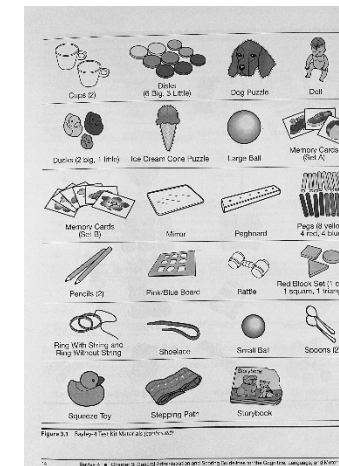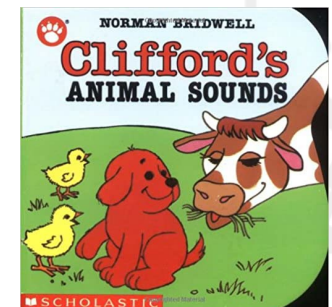Set up on table to side of test table

Rolling cart with drawer carts

Plastic tubs

Plastic Bins

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Bayley-IV Assessment Toys

NO!

YES!

- Check kit regularly for lost/missing items and re-order from Pearson

- **Never** substitute non-Bayley toys
    - May changes item difficulty
    - Example – larger ball (easier to kick) or smaller car (harder to hold)changes difficulty of tasks
    - Contact Pearson directly; more available than website indicates
    - Exceptions
        - Crayons –okay to purchase **large-sized** crayons from other retailers
        - Clifford books widely available

Materials List: Manual pages 13 & 14

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Paper vs Digital Administration

Traditional Paper Administration

- Follow administration guidelines in chapter 4 of manual
- Responses and scores recorded on Bayley 4 Record form
- Similar to Bayley 3
- Advantages
  - Familiarity to examiner
  - Portability
- Disadvantages
  - Administration instructions not comprehensive
  - Requires considerable examiner knowledge/expertise with test

Digital Administration

- Combines administration guidelines & Record form
- Advantages:
  - Guides examiner → administration & scoring
  - Potentially enhances adherence to standardization
- Disadvantages:
  - Cost – iPad
  - Q-global per evaluation score fee ($5 each)
  - iPad distraction to child/examiner
  - Examiner less proficient -dependent on digital format
  - Need to release PHI to outside organization

Determine Start Point Based on Child Age

- Calculate child age in months and days
  - Use method in manual on page 26
  - Use online age calculator – Pearson directs examiners to this one
    - https://www.calculator.net/age-calculator.html or use Pearson App
  - Corrected age calculator for preemies on NRN website
    - Uses gestational age at birth in weeks **and** days
    - https://neonatal.rti.org/index.cfm?fuseaction=AdjustedAgeCalculator.main

- Use age in months and days to find start point using Start Point table on front of booklet
  - All subsections start at this level
  - Find the relevant start point page for each subsection- turn down page corner
  - Example:
    - Cognitive Start Point M; page 7; item 33
    - Receptive Language Start Point M; page 19; item 14
    - Expressive Language Start Point M; page 26; item 8
    - Fine Motor Start Point M; page 33; item 18
    - Gross Motor Start Point M; page 44; item 36

Introducing Bayley-4 to parent/caregiver

- It is *extremely* important to introduce the test to the parent correctly, or parents will end up spoiling items.

- Explain that it is a <u>*standardized*</u> test; you have to administer in the same way with every child using exactly the same words and number of trials.

- Say you want to see what the child can figure out <u>*all by themselves*</u> (even though parents teach children at home).

- But that you will also ask about skills at home for some tasks

- Ask them not to talk to child except to say "yay" or "good job," and to follow your lead about when to praise the child

- Provide reassurance that it is okay if the child does not demonstrate <u>*all*</u> their skills or is noncompliant with some requests.
  - This is true for all children, even the children on whom the test was developed and normed.
  - Therefore, the scoring accounts for noncompliance and underperformance of some skills.

Optimal Order of Administration:

Cognitive	Receptive Language	Expressive Language	Fine Motor	Gross Motor

- **Subtest Order**
  - Can use Fine Motor or Gross Motor as a break between two language scales
  - <u>Important:</u> Receptive Language *must* be before Expressive Language
  - Do not jump back and forth between items from different domains

- **Item Order**
  - Present items in order listed/described in manual
    - Arranged in order of difficulty
    - Designed to facilitate engagement; order of difficulty
  - Some flexibility is acceptable

Bayley-4: Three-point Scoring (Polytomous scoring)

Bayley 4: Polytomous/Three-point scoring - more consistent with our knowledge of developmental growth

| 0=Not present | → | 1=Emerging | → | 2=Mastery |
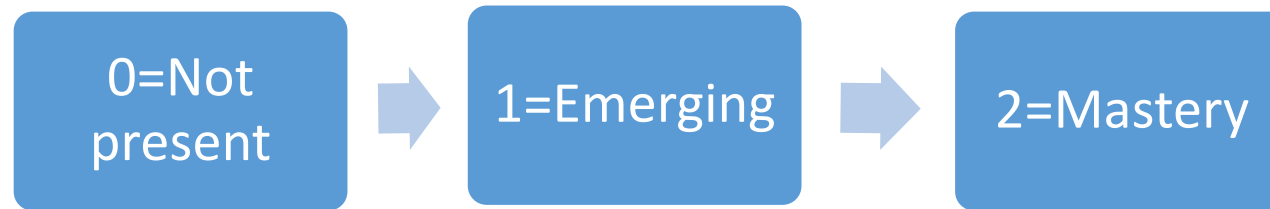
Basal, Reversal and Discontinue Rules

- Basal, Reversal, and Discontinue (Ceiling) Rules are the same across all subtests
- **Basal Rule**: Child must receive a **score of 2** on the first _THREE_ consecutive items at his or her start point
- **Reversal Rule**: If a child receives an "**imperfect score**" (score of 0 or 1) on any of the first three items, go back to the previous start point
- **Discontinue Rule/Ceiling**: When the child receives **scores of 0** for _FIVE_ consecutive items

Surpassed Skills

- In order to increase sensitivity, age sets are now **<u>very</u>** broad

- Often start at very easy items, can frustrate children

- **A surpassed skill** = child does not exhibit a skill because child has outgrown this skill and moved on to more complex skill

- Child receives credit for "surpassed" skills
  - Complex clinical decision with children with atypical development
  - Example; Start at K; Cog item 27 but need to reverse
    - Previous start point is item 19 - Bangs object
    - Child may have exceeded this skill; no longer developmentally appropriate
      - Okay to assume a PASS for items they have likely exceeded developmentally

Assumed Failures: Use Cautiously

- When children do not have the requisite skills to complete a task = okay to assume as a failure

- In these instances, it is not feasible to administer the item

- Examples of assumed failure items
  - Cognitive: #64 Repeats Words (child is not yet imitating or using any words)
  - EC: #23 (2-word phrase), 25 (3-word phrase) & 37 (4-5 word phrase) (child only has single words)
  - GM: any item that must be administered while standing if the child is not yet standing/walking independently.

- Don't just assume failure because you "think" the child can't pass; must have some basis for the decision
  - When in doubt; try it!!

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Bayley 4: COGNITIVE

Review of significant changes from Bayley III

Review of new and challenging items

IMPORTANT – ERROR IN MANUAL
Cognitive 27: Picks Up Another Block

- Bayley-4 author (Dr. Aylward) has confirmed there is an **error in manual.**
- Administer and score as with B3 -attempts to obtain 3rd block
- Similar to item 23 – Holds Blocks (2 blocks)
- Goal is to see if child used problem solving to pick up 3rd block while already holding two blocks (e.g. attempts to pick up with other blocks)

Administer: If child does not pick up both blocks, **put a block in each hand before placing 3rd block on table**
Scoring:

    2 points: Manual *should* say "Holds **2 blocks** while reaching for/attempting to pick up additional block"
    1 point: Releases one block to pick up additional block
    0 point: Shows no interest in additional block

Mark in your manual and on your test booklets

Cognitive 32: Finds Hidden Object

- Use **two cups** and a **block**
- Child gets 4 attempts
  - Trial 1- two sub-trials
    - Child's **left** first; then child's **right**
  - Trial 2 - two sub-trials
    - Child's **left** first; then child's **righ**t
- Scoring
  - 2 points: Finds block on both sides; **same trial**
  - 1 point: Finds block on only 1 side in either trial
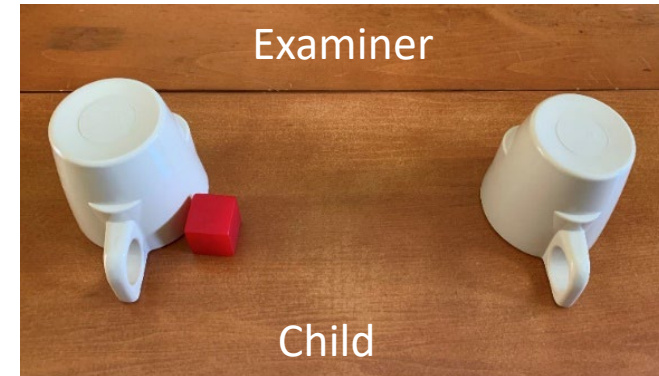
Note: If pass with a 2 on Trial 1; okay to move on; but if child only earns a 0-1 on Trial 1; must do trial 2 to potentially improve score to a 2

Examiner

Child

Cognitive 37: Finds Hidden Object: Reversed

- **Four trials**; start on child's Left, then R, L, R

- **Must do all 4 trials for proper scoring**
  - Full credit (2 points) = correct 4 times
  - Partial credit (1 point) = correct 2 or 3 times
  - No credit for correct cup 0 or 1 time

- **Note**: Be careful when rotating cups to not make too much noise with block hitting cup – difficult to do

Cognitive 42: Finds Hidden Object: Visible Displacement

- Only **Two** Trials
  - B3 had four trials – or 2 presentations of both L and R
  - Trial 1: Hide block on child's left; move block to right
  - Trial 2: Hide block on child's right; move block to left

- Scoring:
  - 2 points: Correct on both trials
  - 1 point: Correct on one trial

Finds Hidden Objects: Strategies

- Handles toward child to facilitate grasp

- Separate cups if child tries to pick up two; or turn handles away from child (need two hands)

- Be cognizant of too much space between cups and front of table/child

- If absolutely no interest in searching for block- probably okay to substitute toy, *if necessary*, and *in some cases*;
  - However, try to use block as this is standard procedure
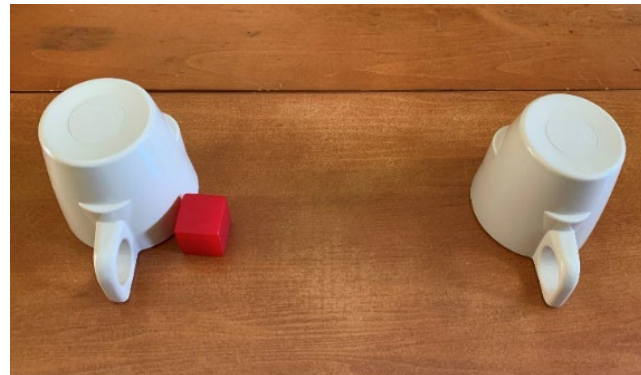
Cognitive 35: Clear Box

Examiner

- B4 uses small ball
  - Difficult because it rolls
  - Important to put ball at back of box; stick it to top
  - Place ball and box on table simultaneously
- Time: 45 seconds
  - 2 points - Full credit 1-20 seconds
  - 1 point – Partial credit 21-45 seconds
  - Long time for frustrated children
- **Notes:**
  - Be sure child can only see ball through top of box, not the open end
  - ***Must place toy and box on table as one unit; try to push ball to side of back to prevent rolling***

Cognitive 38/46 Pegboard Series

- **Change from B3:**
  - **Pegs removed and placed <u>behind</u> pegboard; one peg in front of child, perpendicular to board**
  - **Hand one peg at a time - DO NOT DEMO!**
  - Best performance **35** seconds
  - Time limit -**90** secs (not 70 secs as in B3)

- **Lower level - item 38**
  - 2 points - <u>2 pegs</u> in two different holes
  - 1 point - 1 peg in hole or *same* peg two different holes

- **Upper level - item 46**
  - 2 points - all 6 pegs in 1-35 seconds
  - 1 point - all 6 pegs in 36-90 seconds

Child

Examiner
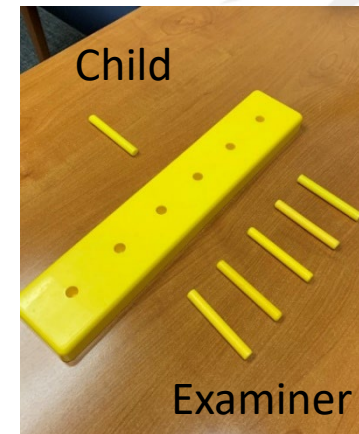
Cognitive 39:   Relational Play: Self

- **Caregiver report only – 1 of 4 caregiver only items**
- Make index card to follow - there are 6 examples provided
  - *'When playing, does X pretend to do things like drink from an empty cup? If Yes, can you give me some examples of other things he/she pretends to do? (if parent needs explanation, provide the following examples)*
    - *Use a spoon to make believe he or she is eating*
    - *Picks up and eats imaginary food*
    - *Wipe face with a tissue*
    - *Attempts to comb hair*
    - *Blows nose*
- Scoring
  - 2 points: caregiver provides 3 or more examples
  - 1 point: caregiver provides 1 or 2 examples
- NOTE: Be sure to encourage parents who are quiet or less verbal as the parent's responses determine the child's score.

Cognitive 44: Relational Play: Others

- Significant changes from B3
  - there are <u>more</u> prompts directed toward child
  - **This is <u>only administered</u> play item (others are caregiver report)**

- Must use **<u>all</u>** specified objects:
  - doll, cup, spoon, small ball, comb, tissue

- Point to cup; say "*Give the baby a drink*." (counts towards scoring)

- Give child a <u>spoon</u> "*How do you use this with the baby* (or caregiver)"
  - **Note: Do not *<u>tell</u>* child what to do with these objects- not a RL task!!!**
  - Use same verbal prompt with ball-- comb -- tissue

- Scoring
  - 2 points= uses 2 or more objects with doll or caregiver
  - 1 point = uses only one object with doll or caregiver

Cognitive 50: Representational Play

- **Caregiver question only**:

"When playing, does X make believe an object is something else, like pretending a ball is a piece of fruit?" If yes, *"Can you give me some other examples of other ways that he/she makes believe an object is something else?"*

- Can give the following examples *if parent needs further explanation*
  Can make index card to help you remember examples:
  - A bucket as a hat
  - A block as a phone
  - Beads as some type of food
  - Small towel as a blanket

- Scoring:
  - 2 points: caregiver provides 2 or more examples
  - 1 point: Caregiver provides 1 example
  - 0 points: Caregiver says no; provides 0 examples

Cognitive 59: Imaginary Play

- **Change from B3 - Caregiver Question Only**

"*When playing, does X use imaginary objects?*

Examiner may need to explain what <u>imaginary</u> means

Imaginary play means there is nothing in the child's hands – they are *imagining* an object

"*Can you give me some examples of him/her using imaginary objects*"

- Provide 8 Examples in manual
  – Make Index Card

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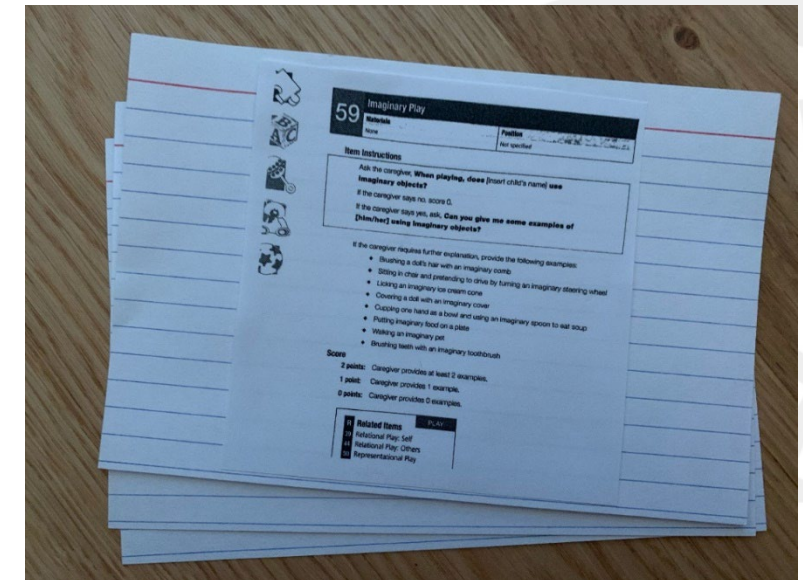
Cognitive 41: Listens to Story

<u>Caregiver</u> reads the story; examiner prompts parent to say "*Let's read the story*"
- 2 points: Child attends to entire story w only brief lapses
- 1 point: Child attends for only a short time (not defined further)

<u>Note</u>:
- First, let child explore book, look at pictures, and turn pages for a few seconds before asking parent to read;
- Encourage parent to read each page, if possible

- <u>There is also a caregiver question</u>. Can be used if child gets less than full credit, but use only if child's behavior was ambiguous or child was unusually uncooperative (admittedly, this is involves clinical judgment). Do NOT use just to increase score with an otherwise cooperative child but who is less attentive

- For parents who you suspect may not be able to read, you can tell them to just discuss the pictures while turning the pages and looking with the child
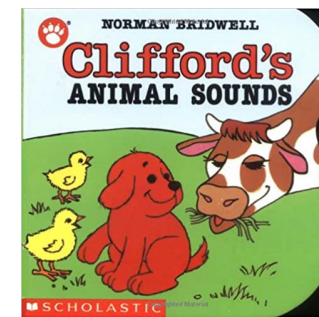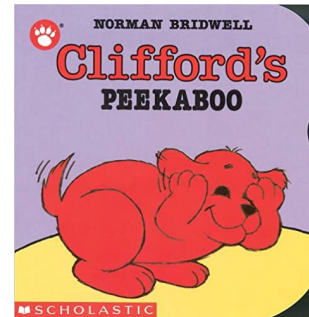
Cognitive 30/45: Block Series: 3 blocks/9 blocks

- Item is now **TIMED**
- Start with cup and **3 blocks**
  - 6 blocks kept out of sight now
  - Place 3 blocks into cup one at a time; then take out and **hand one at a time to child**
  - If child doesn't take block, place on table in front of child; encourage to put blocks in cup
  - As child puts each block in, add another block to table
- **Timing: Allow 120 seconds**
- Potentially confusing directions: *"Give credit for blocks successfully placed in cup even if they are removed from cup or accidentally knocked over"*
  - Score based on total number child gets in at one time, not total across all attempts
- Note: steady cup for child to prevent cup falling over.

Cognitive 43/49/55 Blue Board Series

Demo ⬇

- **Layout**
  - 4 circles; 4 squares laid out on examiners side of board;
  - **Demo provided with 5ᵗʰ square placed in hole at child's lower left**
  - Time: 90 seconds (change from B3)

- Scoring for 43: 1 piece
  - 2 points= 1-9 pieces that fit exactly within 90 sec
  - 1 point= 1 piece within 90 secs _but does not fit exactly_

- Scoring for 49: 4 pieces
  - 2 points = 4-9 pieces, that fit exactly, within 90 sec
  - 1 point = 3 pieces, that fit exactly, within 90 sec

- Scoring for 55: 9 pieces
  - 2 points = 9 pieces, that fit exactly, within 90 sec
  - 1 point = 5-8 pieces, that fit exactly, within 90 sec

- Note: "Does not fit exactly" - no further clarification in manual, but should not just be randomly placed; must be some significant attempt to fit in hole or is partially in; not just dropped or placed randomly
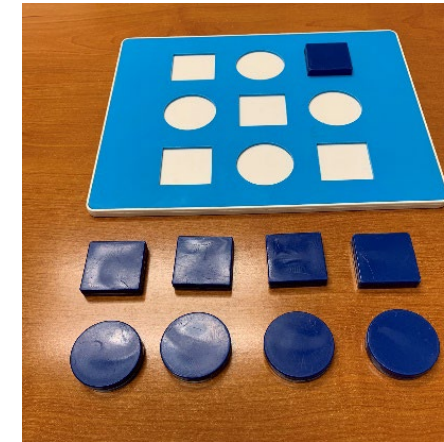
Cognitive 40/47/51 Pink Board Series – Regular and Reversed

- **Timing - total time 90 sec**
- MUST remove pieces in order
  - First square, then circle, then triangle
  - Pieces MUST be correctly laid out
- For reversed item (51) - rotate board ON table
- Do not let child touch pieces until they are set up on table– necessary for proper timing – okay to hold them down with one hand until ready to stat timer
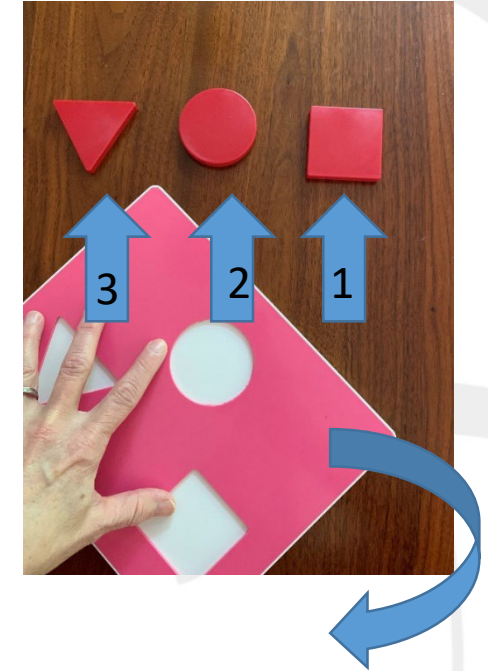
Cognitive 52/53/73/74 Object Assembly:
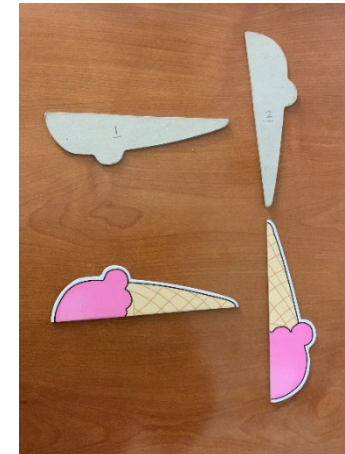# Ball, Ice Cream, Dog, Cat

- **Change from B3**:
  - Only **one** trial each
  - **Exact timing essential**!
  - Cat Puzzle is new to B4

- Scoring: (no more than ¼ inch misaligned)
  - 2 points: assembles in 1 – 60 sec
  - 1 point: assembles in 61-90 sec

- **Note**: Okay to prompt child to complete **on** the table; much too difficult to score alignment if child is holding puzzle pieces above table
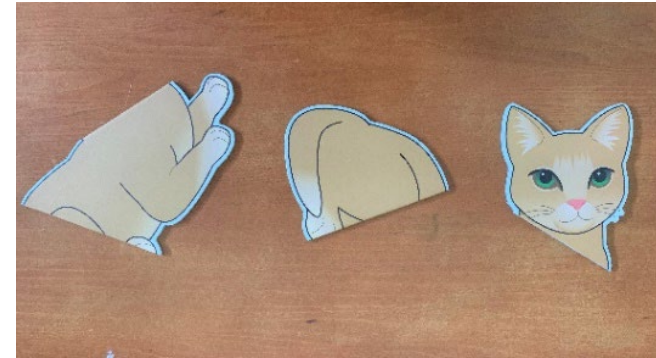
Cognitive 56: Spatial Memory: 3 Cards

- **NEW ITEM TO Bayley 4**
- Be sure to use correct layout

"Now we're going to play a card game. Look at the pictures and remember where the shoe (point), the ball (point), and the train (point) are."

- Exact timing is necessary
  - **Expose cards for 10 seconds**
  - Then turn cards over
- Three trials
  - Trial 1: Show me the ball (turn chosen card back over)
  - Trial 2: Show me the shoe (turn chosen card back over)
  - Trial 3: Show me the train
- Scoring
  - 2 points: Correct response 3 trials
  - 1 point: Correct response 1-2 trials
- Do not let child turn cards
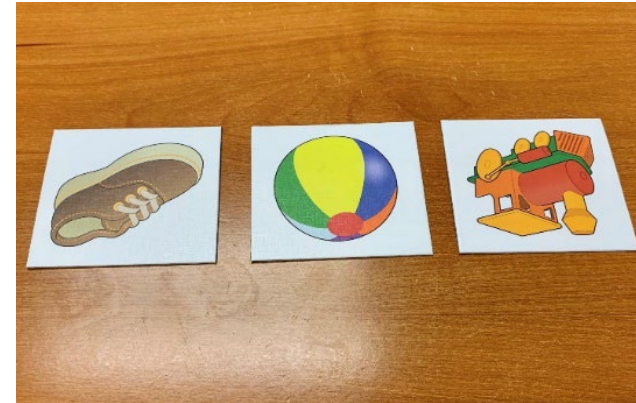
Cognitive 76: Spatial Memory: 6 Cards

- **Change from B3: Updated Cards**

 "Now we are going to play a card game. Look at the pictures and remember where the cars (point), the dogs (point) and the flowers (point) are.
- Be sure to use correct layout
- Exact timing of card exposure is necessary
    - **Expose cards for 10 seconds;** then turn cards over
- Three trials (dogs, flowers, cars)
- ***Note:*** *If child only chooses one card, say "where is the other one?"*
- Scoring (note difference with 3-card item)
    - 2 points: Correct response 2 to 3 trials
    - 1 point: Correct response 1 trials

Child

Examiner

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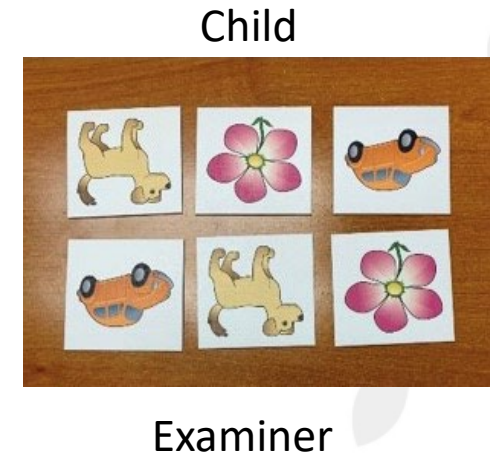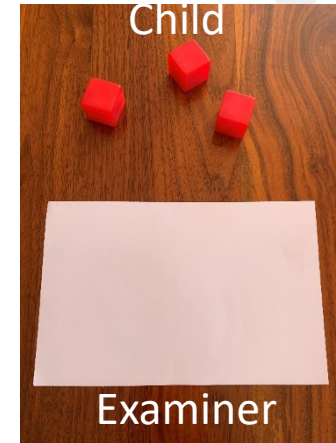
Cognitive 60: Recalls Names

- **New to Bayley 4**
- Follow Directions written in Stimulus Book
- Show the three learning trials
  - **exposure 3 seconds** each page- 25, 27, 29
  - *"This is Jamie" "This is Lee" "This is Maria"*
- Then: Recalls Names page
  - *"Show me Maria"*
  - *"Show me Jamie"*
  - *"Show me Lee"*
- Scoring
  - 2 points = 2-3 correct
  - 1 point = 1 correct

Cognitive 61: Understands Concept of One

- Child puts one block on paper
  - Place 3 blocks and piece of paper in front of child
  - Say *"Put 1 block on the paper"*
  - Begin Timing: 20 seconds

- Scoring (potentially confusing):
  - 2 points: 1 block in 1-5 seconds
  - 1 point: 1 block in 6-20 seconds, **or initially places 1 and then adds more blocks (i.e. places one, <u>pauses</u>, then more)**
  - 0 points: no blocks on paper within 20 sec or initially places all blocks on paper

- Note: An awkward item
  - 20 seconds is a **long** time
  - Try not to look at child expectantly

Child

Examiner

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Cognitive 62/63 Grouping: Color and Size

Change: B3 to B4 - Uses colored disks instead of colored ducks; but layout of colors/size is the same

Color Grouping

Be sure to use correct layout – blue tested; not yellow

"Show me all of the blue circles"

Size Grouping

Little is asked first:

"Show me all the little circles"

"Show me all the big circles"

Cognitive 65: Compares Masses

- Only two trials (weighted duck in each hand only *once*)
- Uses big blue plastic ducks
- Trial 1:
  – Weighted duck in child's **left** hand first
  – Unweighted duck in child's **right** hand first
- Trial 2:
  – Switch hands - weighted in right; unweighted in left
- Score
  – 2 points- correct both trials
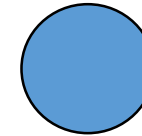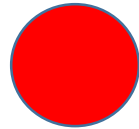 – 1 point - correct one trial

Cognitive 64: Repeats Words

- B4 New Item
- Must administer **teaching trial** first - "Dog"
- Proceed with trials 1 - 4 *(regardless of performance on teaching trial)*
- State words at rate of **1 per second**
  - Dog - car
  - Tree - fish
  - Boy - house - ball
  - Cat - girl - cup
- All *four* trials needed for scoring (2 points = 3-4 trials correct)
- For child who does not yet imitate or use 2-word phrases - can try it but can assume failure and move on if quickly apparent exceeds child's skills

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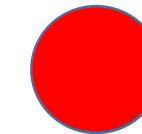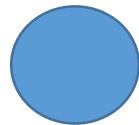ECHO ▸ A program supported by the NIH

Cognitive 66: Matches Size

- **TWO trials**
- Trial 1:
  – *Which one of these goes with this one?*

- Trial 2: **Switch position of Big Red and Big Blue**
  – *Which one of these goes with this one?*
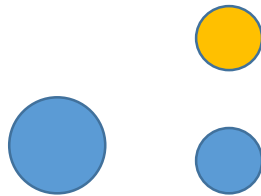
  Scoring
  – 2 points: Correct for two trials
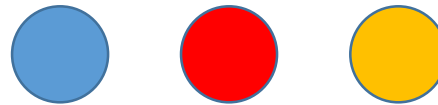 – 1 point: Correct for 1 trial

Cognitive 68: Simple Patterns

- **TWO** trials
- Trial 1: *Which one of these goes with these?*

Target Group

Search Group

- Trial 2: Replace little yellow with little red. *Which one of these goes with these?*
- *Scoring:*
  - *2 points: correct 2 trials*
  - *1 point: correct 1 trials*

Cognitive 70 and 77: Counting Items

- 70: **One-to-one Correspondence** - 5 blocks
  - Child counts each block
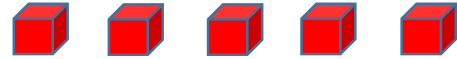
- 77: **Counts: Cardinality** – 10 blocks
  - *Count these blocks out loud so I can hear you. Start here.* (child counts). *How many blocks are there?*

    - 2 points: Counts 10 accurately **and** <u>says 10</u>
    - 1 point: Counts 5-9 or counts 10 blocks but does not say 10
    - 0 point: Does not count at least 5 blocks

- Do NOT start counting for child; child must count independently from 1c

Cognitive 78: Number Constancy:

- Note confusing scoring directions
- Uses 5 blocks
- Scoring directions are confusing - must consider what is being measured – **constancy** – understanding that number is constant even if blocked is moved
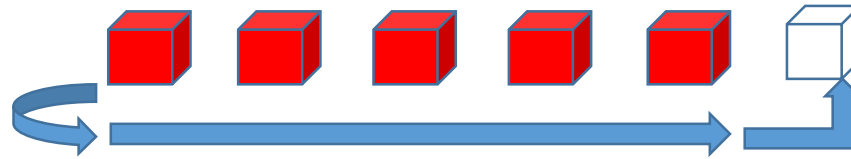

- **Scoring**
  - 2 points: Counts 5 blocks and says 5 **(after Q2, which is after you move block= has to show constancy)**
  - 1 point: Counts 5 blocks but does not say there are 5 blocks, or does not count 5 but says there are 5
  - 0 points: Does not count 5 blocks and does not say there are 5 blocks

    NOTE: Do not let child count again after you move the block; if they need to count again, they fail as they don't understand number constancy

Additional Items and Common Errors when Administering Cognitive Scale

- 48 - Uses Pencil to Obtain Object
  - Use small blue plastic duck
- 54 - Matches Pictures - updated pictures
  - Must give corrective feedback if fail trial 1 (teaching trial)
- 57 - Imitates two-step action
  - Only *one* demo; *three* child attempts
  - Use small blue plastic duck
  - Partial credit (1 point) for 1 step
- 58 - Matches 3 colors
  - follow directions in stimulus book *exactly*
  - *Remove each disk before presenting next colored disk*

# Bayley 4: LANGUAGE

Review of significant changes from Bayley III

Review of new and challenging items

Caregiver Questions: Three-Point Scoring

- Many of the language items allow for caregivers to provide information that can be used if the child does not respond.
- Need to get frequency of response

Caregiver Response	Score	Description
Almost Every Time/Often	2	• Child is consistently able to perform a task when he/she tries • Child responds the same way almost every time; • Child is able to perform task **75% of the time**
Some of the Time/Not Often	1	• Child performs task inconsistently or intermittently when he/she tries • Child responds the same way only some of the time • Child is able to perform **less than 75% of time**
None of the time/Not a lot	0	• Caregiver reports skill or behavior is not yet present in any form • Child attempts but is not successful • Child is not yet able to perform task when given opportunity
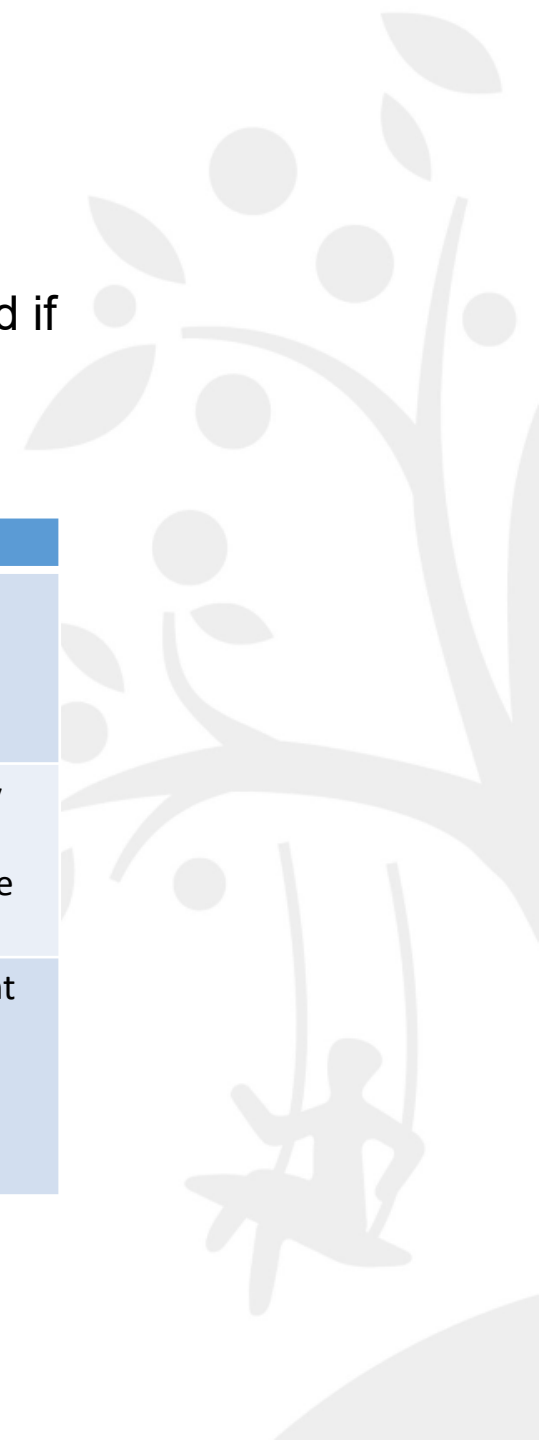
Receptive Language Subscale

Receptive Language 10 and 11 – May be surpassed skills

These items are first two items for start point L and needed to obtain basal

10 – Brings Ring to Mouth and 11- Bangs objects

Child may not longer exhibit these behaviors as they have moved out of the stage of mouthing and banging (surpassed skills).

- May need to ask the parent if the child used to mouth toys (item 10) or bang toys (item 11) but no longer does.

- You can provide credit for these items based on parent report of past history

- Don't want to fail child for an item that they have developed beyond or *surpassed*
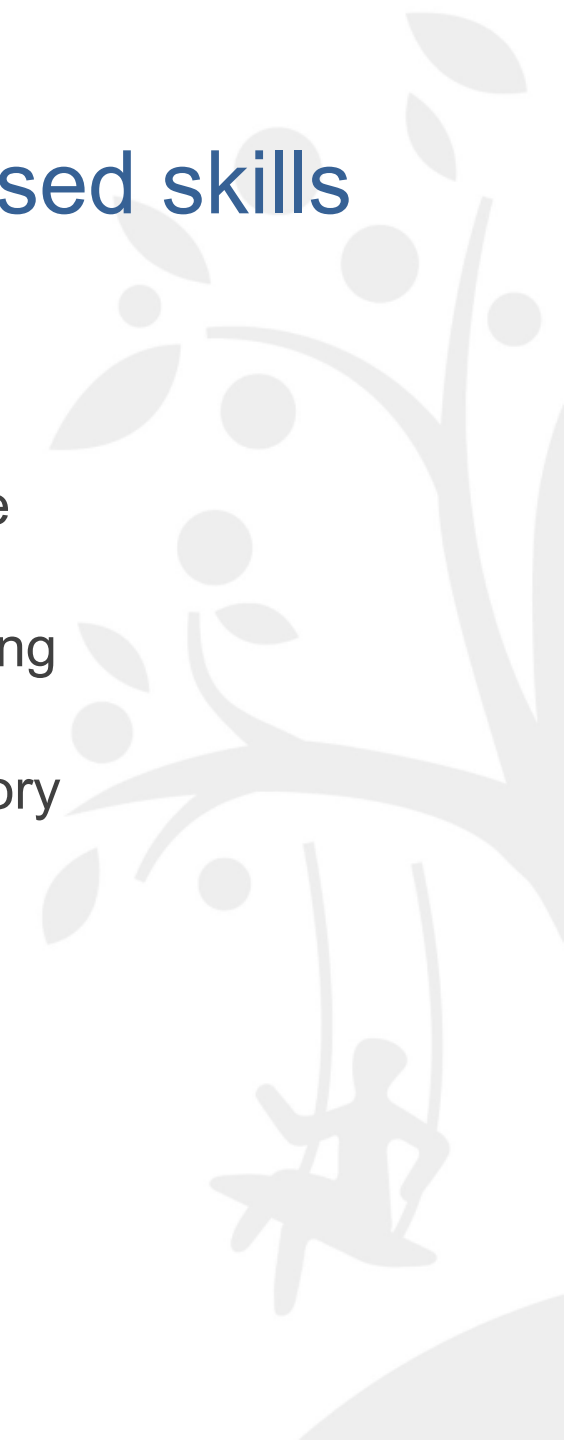
Receptive Language 12 – Responds to Name

- Observe to see if child responds when name is called; can score based on incidental observation
- If don't observe incidentally, have parent stand beside child and call their name without touching child or using inflection
- Next, have parent call child by an unfamiliar name
- Then, have parent call child by own name again

Scoring

      2-points: Turns head both times name is called and not to unfamiliar name

      1-point: Turns head 1 time name is called and not to unfamiliar name

      0-points: Responds to unfamiliar name or does not respond to name either time it is called

Note: There is also a caregiver question regarding response to name if child is uncooperative or doesn't respond in typical manner
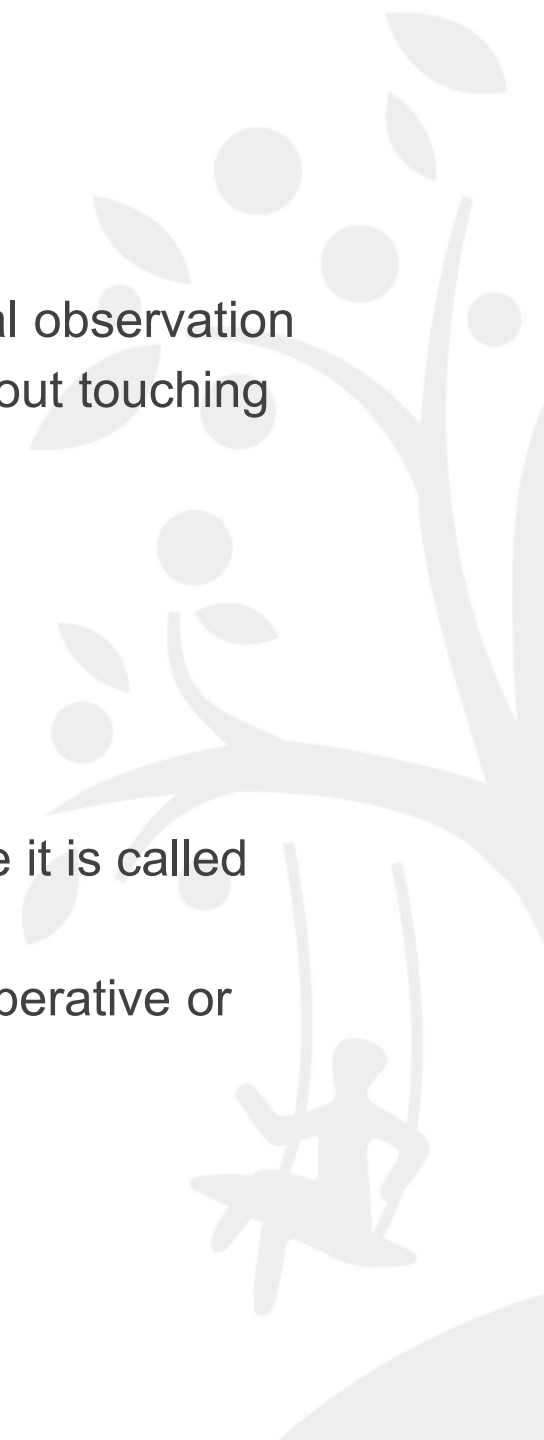
Receptive Language 13: Recognizes Words

- Place 5 familiar objects 6 inches apart in front of the child.
- Ask caregiver to identify 5 objects child is familiar with
- Must not be items used for item 16 – Identifies Objects
- Ask: *"Look at_____"*
  - 2 points: Looks at 2 objects/ often
  - 1 point: Looks at 1 object/ not often
- There is a caregiver question to be used for clarification but do try to observe skill if possible

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Receptive Language 14: Response to Request for Social Routines

- Observe or ask parents to <u>verbally</u> ask child to respond to directions such as pat-a-cake, peek-a-boo, blow kiss, wave bye, high-5.

- No demonstration or hand gestures allowed – MUST be verbal only

- If no clear response, can use caregiver report to obtain a score.
  - 2 points: Responds to 1 request every time
  - 1 point: Inconsistently responds to 1 request

Receptive Language 15: Attends to play routine

- Parents engage in a familiar play routine of their choice such as pat-a-cake, peek-a-boo, Itsy-Bitsy Spider, Head Shoulders Knees and Toes, Baby Shark, etc.
- Time the interaction and encourage the caregiver to continue the activity for at least 30 seconds.
- Child does not need to participate actively but must clearly quiet and watch caregiver
- There is NO caregiver report for this item.
  - 2-points: attends for 30 seconds of continuous play
  - 1-point: attends for < 30 seconds to play

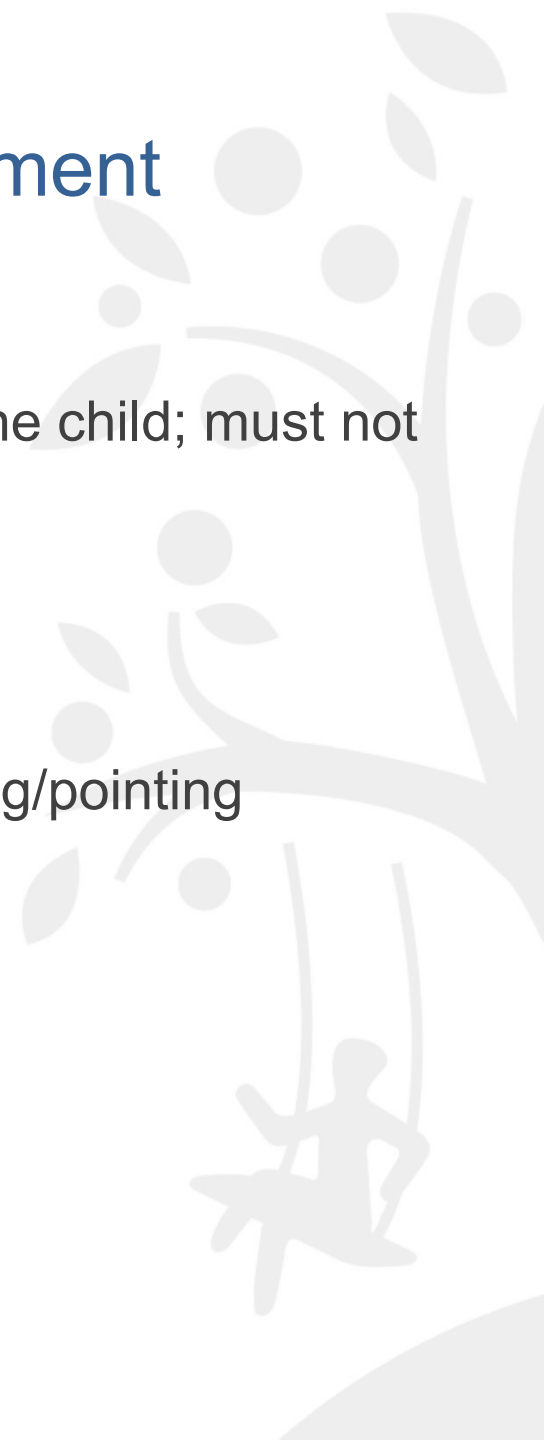# Receptive Language16: Identifies Objects

- Place the items in a line in any order :

    Book – Cup – Spoon – Ball – Doll

- Use directions:

 "Show me__" or **"Where's the__"** or **"Get the__"**

- 2-points: Identifies 3 objects
- 1-point: Identifies 1 to 2 objects
- 0-point: Identifies 0 objects

    No Caregiver Question for this item

Receptive Language 17: Identifies Objects in Environment

- Can ask the caregiver about objects in the environment that are familiar to the child; must not be items used in previous items (item 16 or item 13)
  - Examples: shoes, light, door, table, bottle, etc.
- Make sure to get the child's attention first.
- Use directions: **"Where is"** or **"Show me"**
- The child can earn credit by clearly looking at object you name or by reaching/pointing
  - 2-points: Identifies 2 objects
  - 1-point: Identifies 1 object
- No caregiver question for this; child must demonstrate this skill

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Receptive Language18 & 22: Picture Series

- Use stimulus book to show pictures of objects
  - There are two pages; 6 pictures per page.
- Make sure to get child's attention first- don't keep asking; can be counter-productive; only ask each one once or twice
- Use directions: **"Show me"** or **"Point to" (e.g. cookie, bird, ball, etc.)**
  - Item: 18
    - 2-points: Identifies at least 3 correct pictures (and up to 12)
    - 1-point: Identifies 1 or 2 correct
    - 0-point: identifies 0 correct
  - Item 22
    - 2-points: Identifies at least 6 correct pictures (and up to 12)
    - 1 point: 4 or 5 correct pictures
    - 0-point: 0-3 correct

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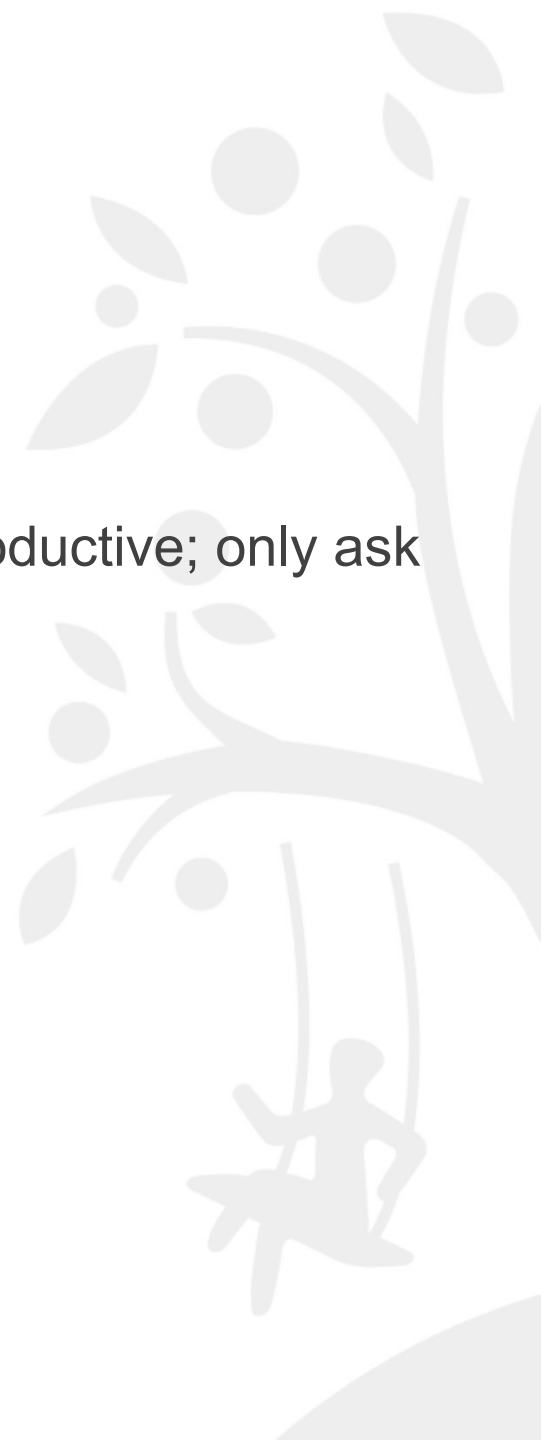
Receptive Language 19: Parts of the Body

- Ask the child to point to body parts on themselves or caregiver.

- Use the directions: **"Show me" or "Point to"**

- Use checklist in booklet to keep track

  - 2-points: Correctly identifies 5 body parts
  - 1-point: Correctly identifies 3-4 body parts
  - 0-points: Correctly identifies 0-2

Receptive Language 20 & 24: Parts of Doll series

- Use the doll, holding it within the child's reach.
- Use the directions:
    " Show me the baby's ___"
    "Where is the baby's___"

Use checklist in booklet to mark correctly identified body parts

- #20
    - 2-points: Identifies 2-9 body parts
    - 1-point: Identifies 1 body part
    - 0-points: identifies 0 body parts
- #24
    - 2-points: Identifies 5-9 body parts
    - 1 point: Identifies 3-4 body parts
    - 0-point: Identifies 0-2

Receptive Language 21: Follows 1-part Directions

- Sit the doll on the table.
- One at a time, hand the child the item and then give the direction:

    "The baby is hungry. Feed the baby" (hand spoon to child)

    "Comb the baby's hair" (remove spoon; hand comb to child)

    "Wipe the baby's nose" (remove comb; hand tissue to child)

    - 2-points: 3 correct responses
    - 1-point: 2 correct responses

NOTE: Do Not Give All Objects at Once; Present one at a time

Receptive Language 23: Identifies clothing

- Ask the caregiver if the child can identify any clothing items. If they say no, score 0 and proceed to next item
- If caregiver says yes, then ask the child to identify by clearly looking at or pointing at the named article of clothing
- Can identify clothing on self or parent
- Only use clothing items worn by child or parent (obviously)
- Use checklist in booklet to present and keep track of correct items (e.g. shoes, shirt, pants, etc.)
- Scoring:
  - 2-points: Identifies 3 clothing items
  - 1-point: Identifies 2 clothing items
  - 0-points: Identifies 0-1

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Receptive Language 25 & 28: Action Series

- Use Stimulus Book for Identifying Pictured Actions (understands verbs)
- Use directions : **"Show me" or "Point to" (waving, riding, sleeping, etc.)**

- # 25
  - 2-points: Identifies 3 verbs
  - 1-point: Identifies 1-2 verbs
  - 0-points: Identifies 0 verbs
- # 28
  - 2-points: Identifies 6 verbs
  - 1-point: Identifies 4-5 verbs
  - 0-point: Identifies 0-3 verbs
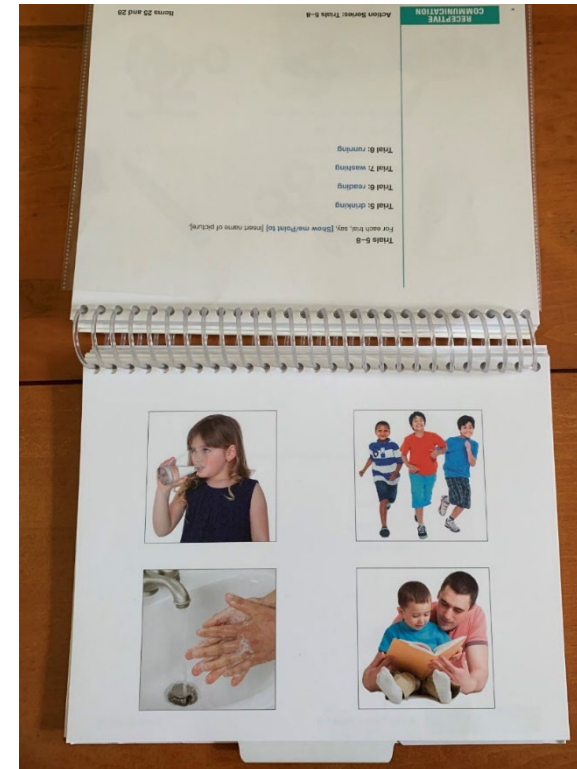
Receptive Language 29: Understands Pronouns

- Place 2 cups and 2 spoons in front of the child.
- Sit the doll on table between you and the child.
- Use directions:" **This is the baby. Help me get ready for our picnic."**

Trial 1: **You take a cup"**

Trial 2: **"Give a cup to her"**

Trial 3: **"Now give a spoon to me,** etc…

- There are 6 trials (you, her, me, my, your, etc.)
- Prior to giving commands for "my" and "your" make sure spoon is in front of you or the child.
- Do NOT use any gestures, such as pointing; child must understand your words
- Scoring
  - 2-points: Correct response to 3 pronouns
  - 1-point: Correct response to 1 to 2 pronouns
  - 0-points: No correct responses

Receptive Language 31: Prepositions

• Place the block and cup on the table within the reach of the child.

• The cup should be upside down

• Use directions:

    "Put the block_____ the cup"

Insert preposition: on, in, under, behind, next to

Child needs to turn cup over for *in*; can put block *under* cup in any orientation

• Scoring
- − 2-points: 4-5 correct responses
- − 1-point: 2-3 correct responses
- − 0-points: 0-1 correct responses

Receptive Language: Items Using Stimulus book

- Make sure to follow the verbal directions <u>exactly</u> as written in the stimulus book.
- Follow the prompts when asked to point to specific items in the book.
- Get the child's attention prior to giving commands as you should not repeat
  directions more than once or twice
- Many items use stimulus book as only material
  - 26 – Understands Object Use
  - 27 – Understands Part-Whole Relationships
  - 30 – Understands Size Labels
  - 32 – Understands Possessives
  - 33 – Understands Verbs +ing ending
  - 34 – Identifies Colors
  - 35 - Understands Pronouns (they, she, he)
  - 36 – Understands Plurals
  - and remaining items through 42
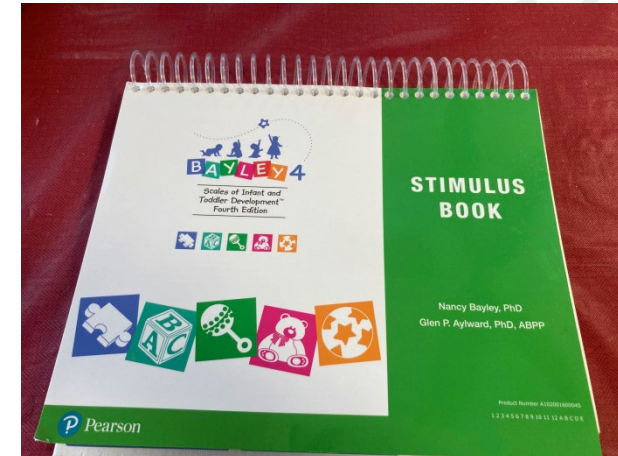
Expressive Language Subscale

Expressive Language:

- Many EL items can be scored based on incidental observation or caregiver report
  - It is preferable to observe child's skills; if they don't exhibit particular skills, use caregiver questions
- Start point L: item 8 through item 17 – can all be based on examiner observation or caregiver report (if needed)
- MUST become familiar enough with items, so you can be listening to child's verbalizations throughout *entire* assessment period
- Record every sound or word you hear from child (unless extremely verbal with full sentences; then this is hard to do
  - Jot down anywhere on booklet
- When using caregiver question, follow the prompt in the test booklet as closely as possible.

Expressive Language 15: Uses Appropriate Words

- Listen for words child uses spontaneously (not imitated) and that apply to a situation or objects
- Common words include: mama, dada, baba, ball, cup, this, that, etc.
- Uh-oh and yeah are counted if used meaningfully
- Poorly articulated words are included if child's intent is clear
- Can use caregiver question – use correct wording
- Be cautious, as many parents will report use of words when the child is actually just playing with sound or jabbering with inflection. The intent needs to be clear (e.g. actually calls to "dada" not just babbling with duh-duh sound; "hey" used intentionally as greeting, etc.)
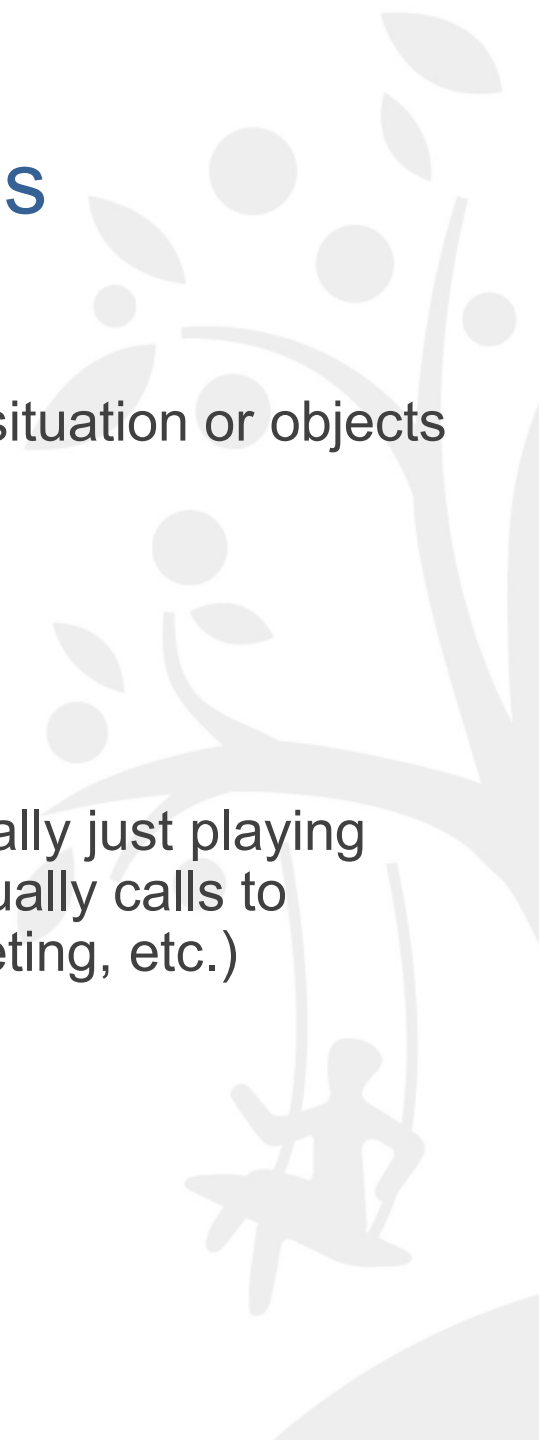
Expressive Language 16: Uses words to make wants known

- Listen for any words the child uses to make wants known – child is communicating a desire, not just naming objects.

- Often used with a commanding tone and may be accompanied by a gesture

- Common words include: up, down, more, mine, no, please, bottle, etc.

- ***No caregiver question for this item***

- Scoring:
  - 2 points: says at least 2 words to make wants known
  - 1 point: says 1 word to make wants known
  - 0-point: does not use words to make wants known
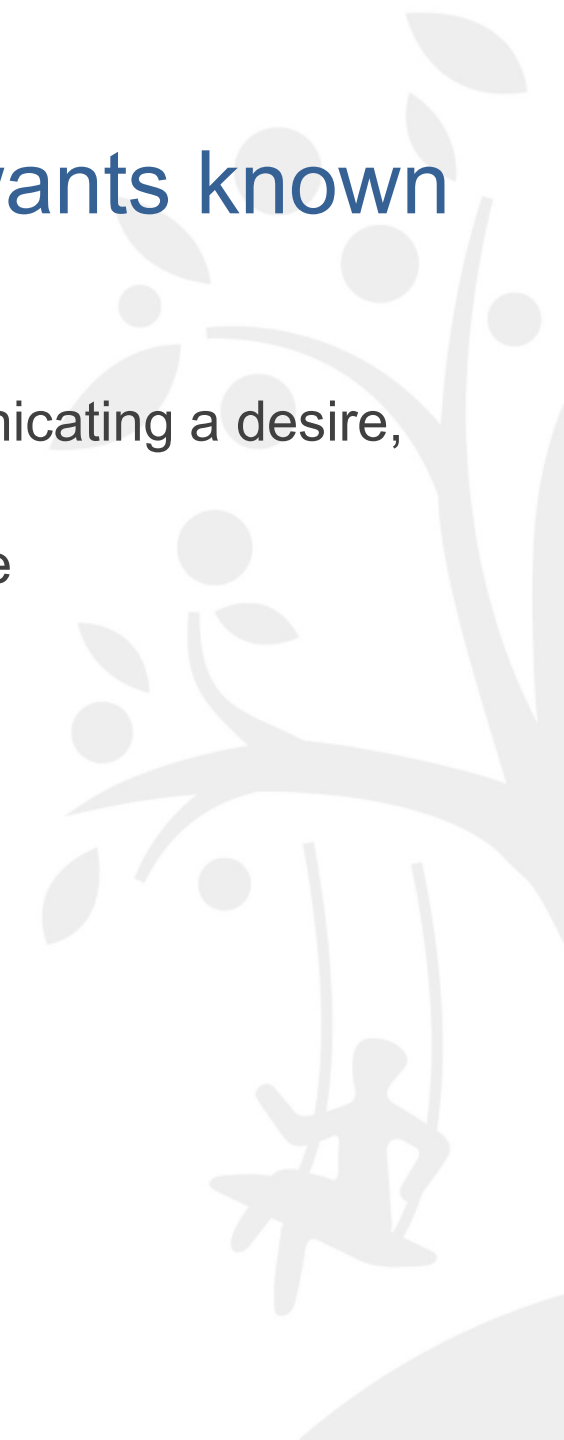
Expressive Language 17 & 24: Intelligibility

- Item 17 – Intelligibility 50% - Listen to determine if you can understand the child's **words or phrases** at least 50% of the time

- Item 24 – Intelligibility 75% - Listen to determine if you can understand the child's **phrases or sentences** at least 75% of the time

- Use your clinical judgment!!! Listen to child and determine how much you can understand of their words or phrases

- There are also caregiver questions; however, parents tend to understand their children better than other people and over-estimate intelligibility; so only use if child is refusing to talk or otherwise underperforming

- Scoring
    - 2- at least 75% of time
    - 1- 50%-74% of time
    - 0- none of the time or < 50% of time
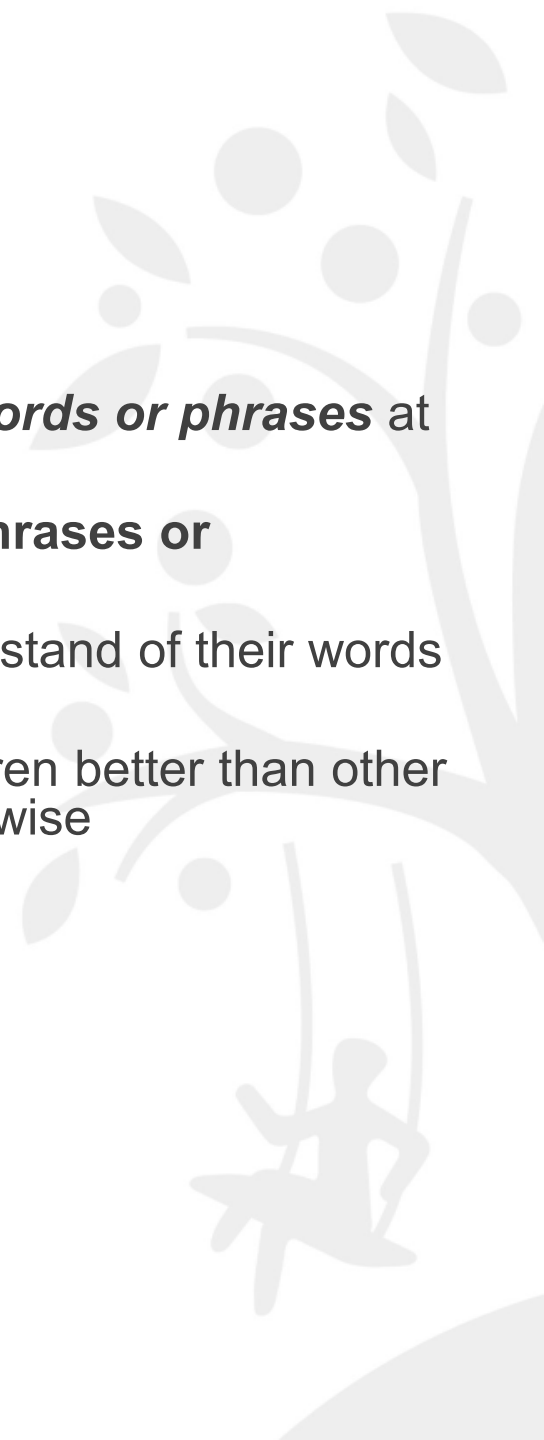
EL 18: Names Objects

- Place the 5 objects on the table – cup, baby, ball, spoon, book

- Point to each object and ask: **"What is this?"**

- Poorly articulated are accepted if intent is clear (e.g. "poon"; "baw")

- Scoring:
  - 2 points: Names 3 objects
  - 1 point: Names 1 or 2 objects

If the child spontaneously names any of these objects earlier in the assessment, make note and give credit for this item. However, be sure the child did not imitate caregiver or examiner saying the name of the object! It must be spontaneous labeling.
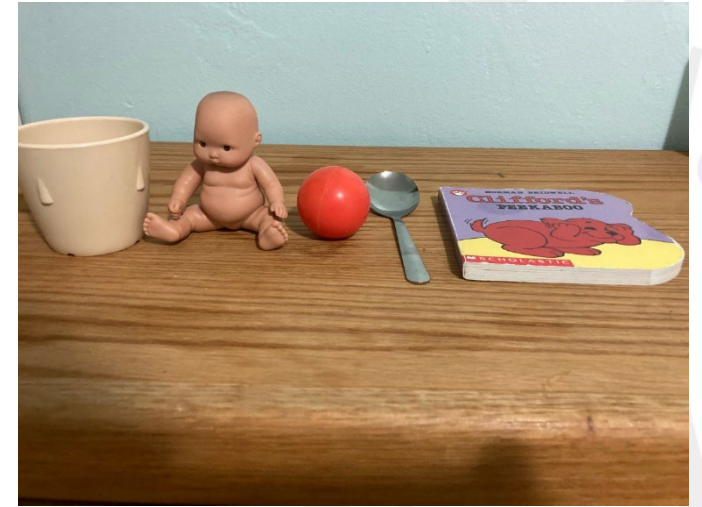
Expressive Language Items 19, 22, 23, 25

Use Incidental Observation or Use Caregiver Questions, if needed

- 19- Combines gestures and words

- 22- Imitates 2 word utterances (can have caregiver try to elicit this)
  - Examples: mama go, my ball
  - Do not count: Bye-bye; oh-no; all done – two separate words that denote separate concept

- 23 – Says 2-word utterances – same as 22 but must be spontaneous

- 25- Says 3-word sentences – must be spontaneous

Scoring: Somewhat vague criteria

- 2-points: frequent and varied

- 1-point: occasional or not often

Expressive Language 21: Answers Yes or No

- Observe responses during the administration of the other scales; work in some questions during testing

- If not observed earlier, administer by asking the child 5 yes/no questions using the following:
  - **"Do you like_____"**
  - **"Do you want_____?"**
  - **"May I have the _____?"**

- There is also a caregiver question if child refuses to talk or is otherwise underperforming.

- Scoring:
  - 2-points: yes/no to 4-5 questions (almost every time- 75% of the time)
  - 1-point: yes/no to 1-3 questions (sometimes; less than 75% of the time)
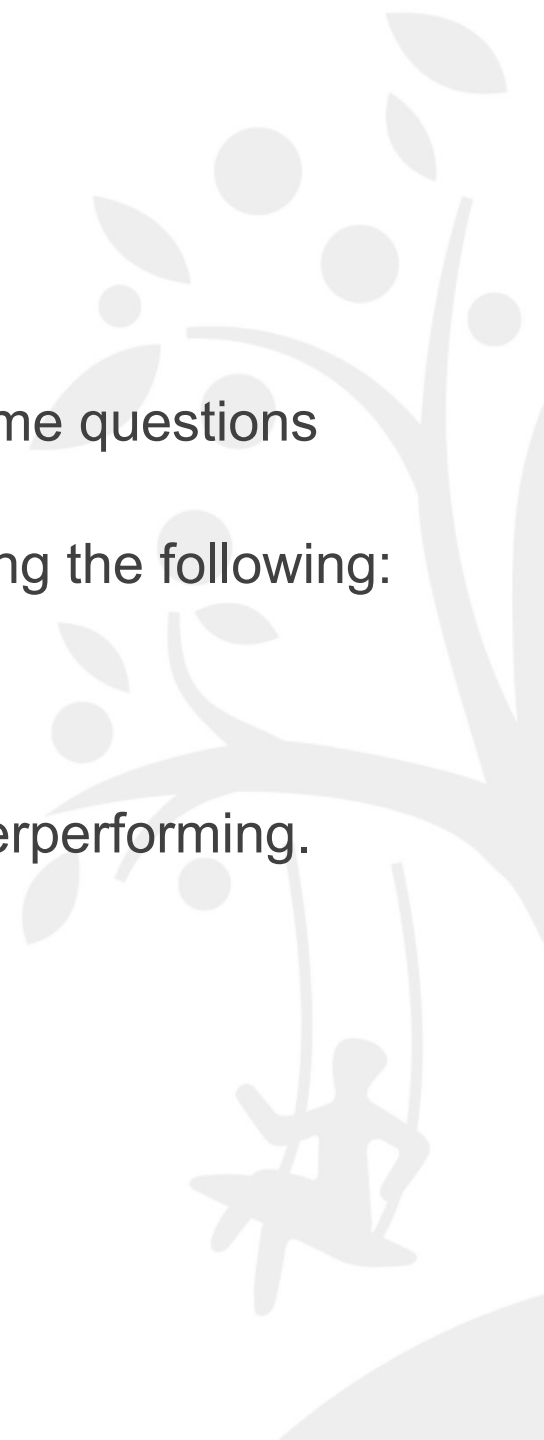
Expressive Language 26: Uses Pronouns

- Listen for any spontaneous pronouns used by the child through incidental observation
- Common early pronouns: *mine; me* – but also include *I, he, she, her, him, you, your*
- If no pronouns heard, try asking questions to elicit a response: **"Here's my block and here's___"**
- There is a caregiver question if child is underperforming, shy, or not speaking much.

- Scoring: again scoring criteria is vague
  - 2-points: Frequent and varied use of pronouns
  - 1-point: Occasional use of pronouns (Not often)
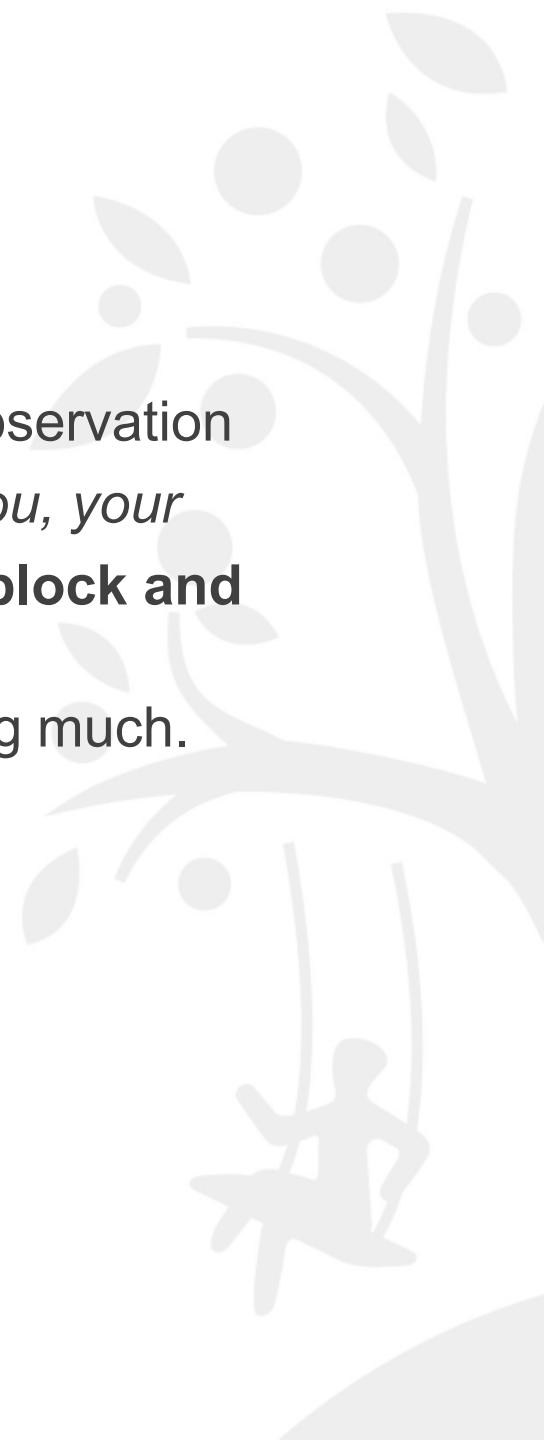
Expressive Language 27 & 31: Names Action Series

- Use stimulus books to elicit use of verbs
- Use verbal prompt: **"What's happening?" or "What's he/she doing?"**
- The –ing ending is optional. For these items, -ing needed to count as correct

Scoring:
- # 27 requires identifying 3 verbs for a 2-point score
- # 31 requires identifying 5 verbs for a 2-point score

EL 28: Poses Questions

- During testing observe if the child uses questions that begin with: who, what, when, where or why
- Phrases/statements that content question-like inflection **do not** count (e.g. "Mommy go?")
- Question does not need to be grammatically correct
- **Cannot use parent report- no caregiver question for this item**
- Scoring:
  - 2-points: frequent and varied multiple-word questions
  - 1-point: occasional multi-word questions
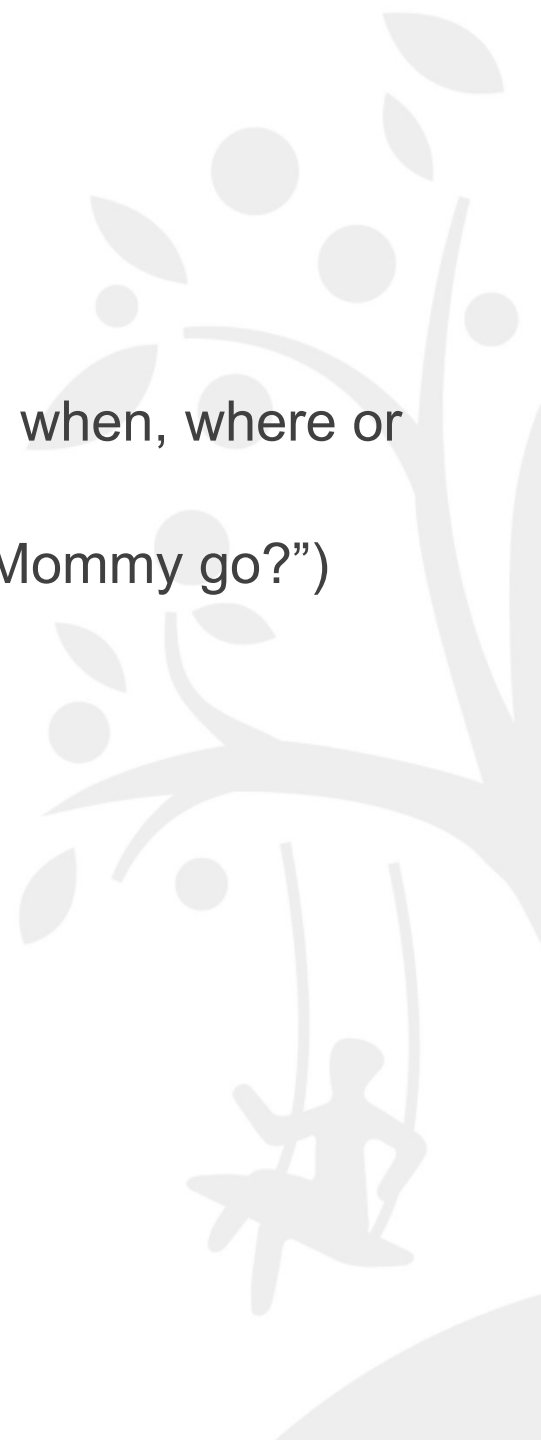
Expressive Language 30: Uses different word combinations

- Listen for at least 2-word phrases that are composed of the following sentence structures:
  - Noun + verb (Mommy go)
  - Verb + noun (want that)
  - Adjective + noun (big ball)
  - Noun + verb + location (baby go home)
  - Noun + **verb + adjective** (baby is tired)
  - **Other** (my bear, Daddy's car, Mommy shoe, who that)

- Helps to record every phrase you hear

- Make sure you can actually hear all words for 3 word phrases
  - Child says "baby _is_ tired" not "baby tired"

- Scoring
  - 2-points: at least 3 different sentence structures
 - 1- point: 1 to 2 sentence structures

Expressive Language 36: Uses Prepositions

- Place the cup in front of the child. Put the block **in** the cup and say: **"Where is the block?"**
- Repeat for each trial placing a block in the location indicated and ask: **"Now where is the block?"**
- Must use the correct word for the location: *'on, under, behind, next to'*
- Most children just say, "right there" or point (no credit)
- Scoring
  - 2-points: correct response to 3-5 trials
  - 1-point: correct response 1-2 trials
  - 0-points: 0 trials

Expressive Language Items that only use Stimulus Book

- 29 – Uses verb + 'ing'
- 32 – Answers questions
- 33 – Uses possessives
- 34 - Names colors
- 35 – Tells Object Use
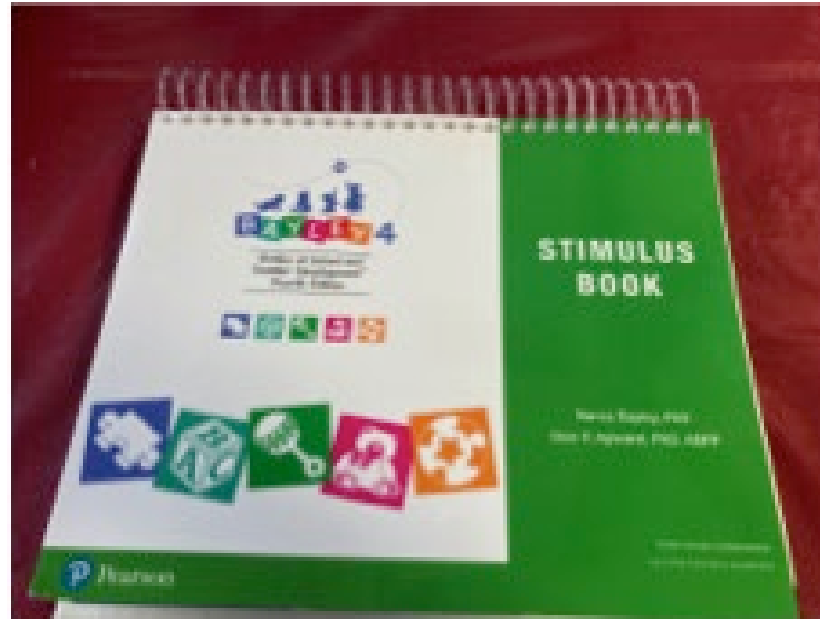
Bayley 4: MOTOR

Review of significant changes from Bayley III

Review of new and challenging items

Fine Motor

Fine Motor: Administration Preparation

- Before beginning the fine motor assessment, please obtain caregiver's permission to use the specified "food pellets" (typically cheerios) to make sure that child has no allergies or known reactions to this food.

Fine Motor: Administration Preparation

- Have a copy of the **Bayley 4 Motor Response Booklet** ready which may be needed when administering later items (now a separate booklet).

- Used for Items #41, #43 & #46
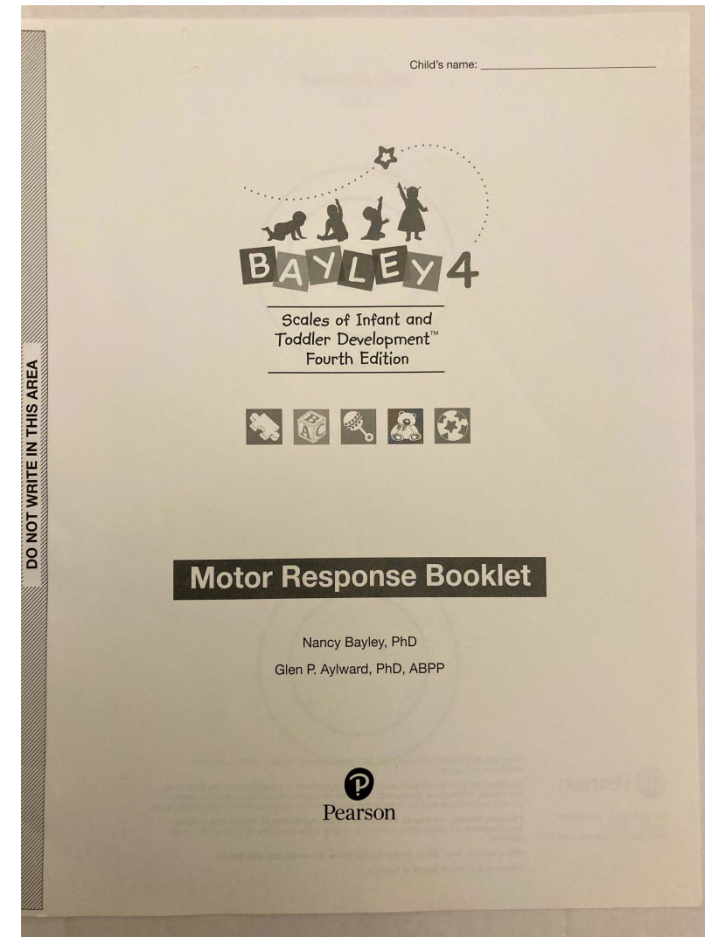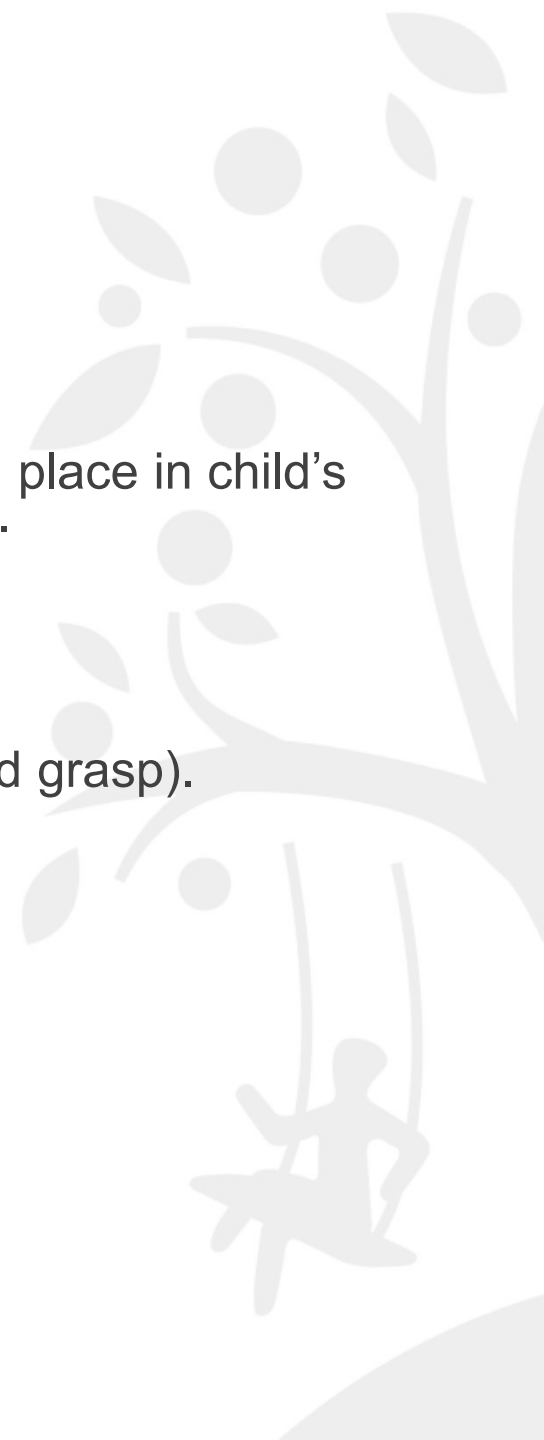
Fine Motor 13 and 18: Block Grasp Series

- **#13 May be first FM item typically administered**
- Place block directly in front of child. If child does not reach for block after 5 seconds, place in child's hand to generate interest. Once interest has been generated, readminister the item.
- Can score from earlier observation if you are attending to grasp at that time

#13 Scoring
- 2 points - Child grasps block using 1 hand with whole hand grasp (or more advanced grasp).
- 1 point - Child grasps block using both hands

#18 Scoring
- 2 points - Child grasps block using thumb-fingertip grasp (or more advanced grasp).
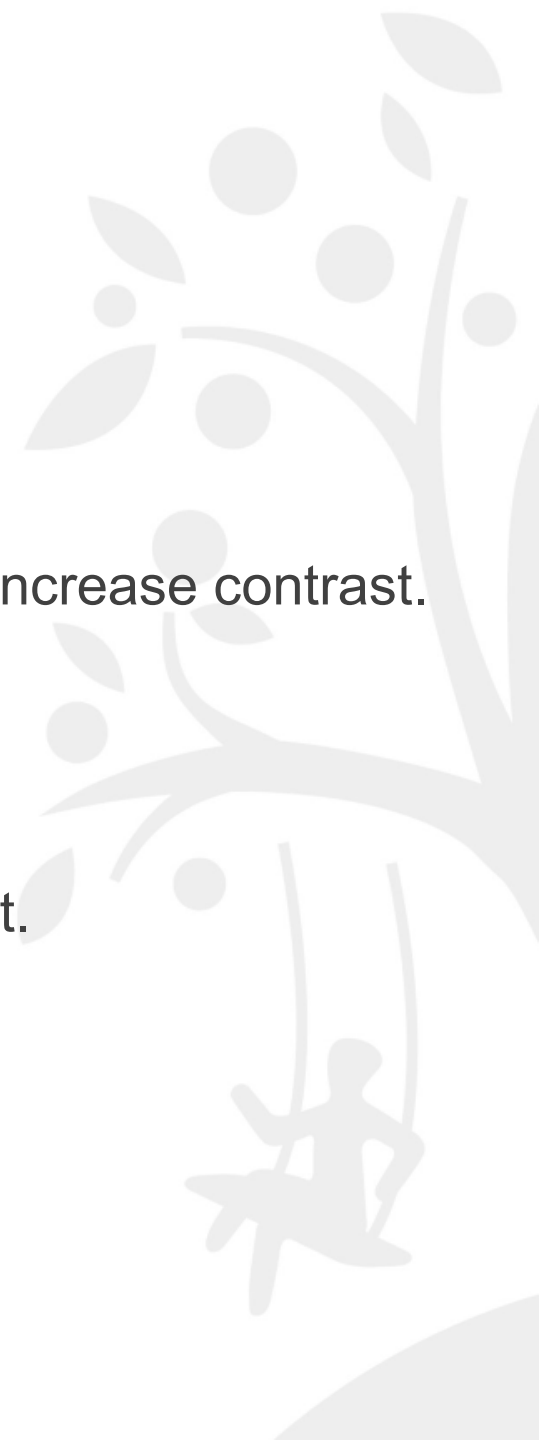- 1 point - Child grasps block using partial thumb opposition grasp

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Fine Motor 14: Looks at Pellet

• Place the pellet in front of the child and tap near the pellet.

• Make sure child can see pellet on table. If needed, place pellet on paper to increase contrast.

Scoring:

• 2 points - Child looks at pellet for at least 3 seconds.*

• 1 point - Child looks at pellet for less than 3 seconds and does not focus on it.

*If child grabs pellet immediately but stays engaged, give credit.

Fine Motor 15 and 19: Pellet Grasp Series

• Place pellet in front of child and tap near pellet to direct child's attention.

#15 Scoring

• 2 points - Child grasps pellet using whole hand grasp (or more advanced grasp)

• 1 point - Child grasps block using raking or inconsistent whole hand grasp

#19 Scoring

• 2 points - Child grasps pellet using neat pincer grasp (defined as thumb and any one fingertip)

• 1 point - Child grasps block using partial thumb opposition grasp

Fine Motor 17: Feeds Self

- **This item is not administered to the child, only the caregiver question is asked.**

- **Caregiver question**: When you give (child) small foods, like peas, puffs, or raisins, is (he/she) able to successfully pick them up with (his/her) thumb and finger and put them in (his/her) mouth almost every time (he/she) tries, some of the time, or none of the time?
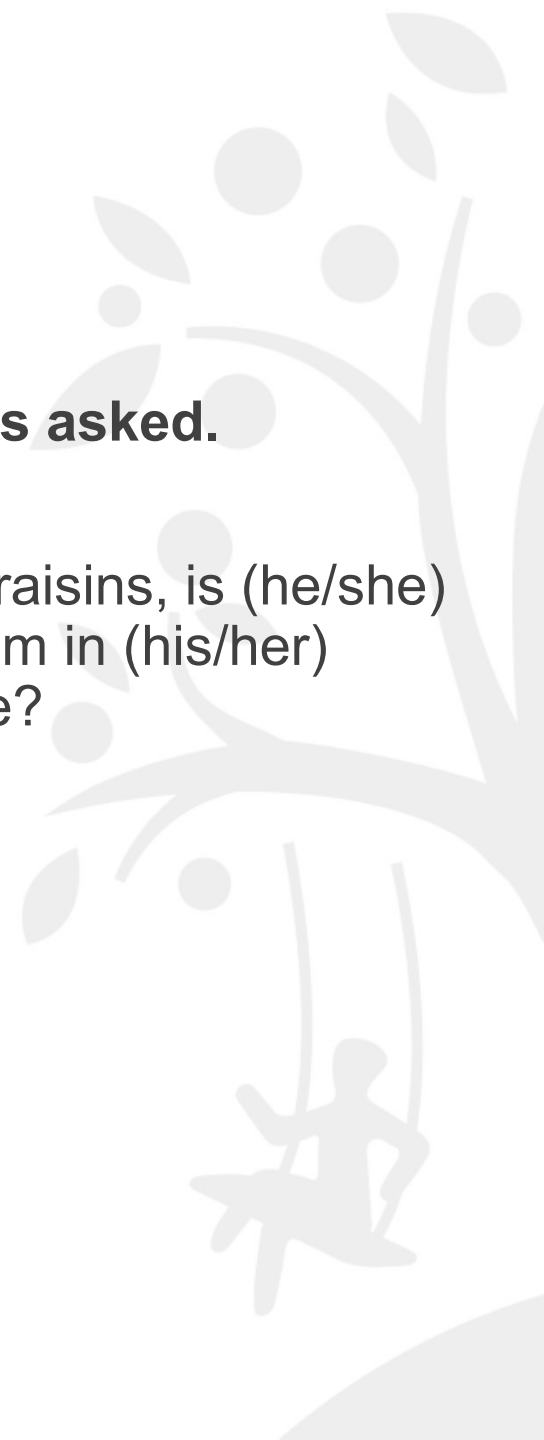
Fine Motor 16: Transfers Block or Ring

- If not previously observed, give child a block to see if he/she transfers it from one hand to the other. If after 2 attempts, child does not transfer block, give the ring (without string) to child.

Scoring:

- 2 points - Child transfers block from one hand to the other
- 1 point - Child transfers ring from one hand to the other (must first try 2 attempts with block)
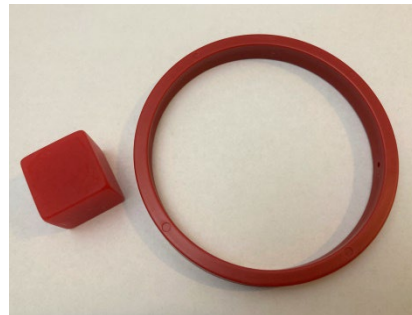
Fine Motor 21, 26, 29, 45: Pencil Grasp Series

- Present child with plain paper and place crayon in middle of paper. (Examiner has own crayon.)

- Child **must pick up crayon on own**, do not hand crayon to child; do not allow caregiver to assist child.

- Encourage child to make marks on paper, if child does not respond, examiner may demonstrate.

- Once child makes a mark, retrieve crayon and turn paper over and have child draw another mark.

- Refer to pictures in manual and test booklet to distinguish between palmar, transitional, static tripod/static quadrupod and dynamic grasps.
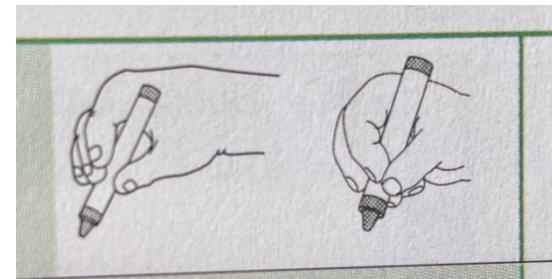
Fine Motor 31: Imitates Strokes Vertical and Horizontal

- Examiner first draws straight vertical line moving crayon rapidly toward child.

- Then <u>regardless of child's performance on vertical line</u>, examiner draws a horizontal line from examiner's right to left so the child views the line being drawn from their perspective of the traditional left-to-right orientation.

- Examiner may hold paper in place for child.
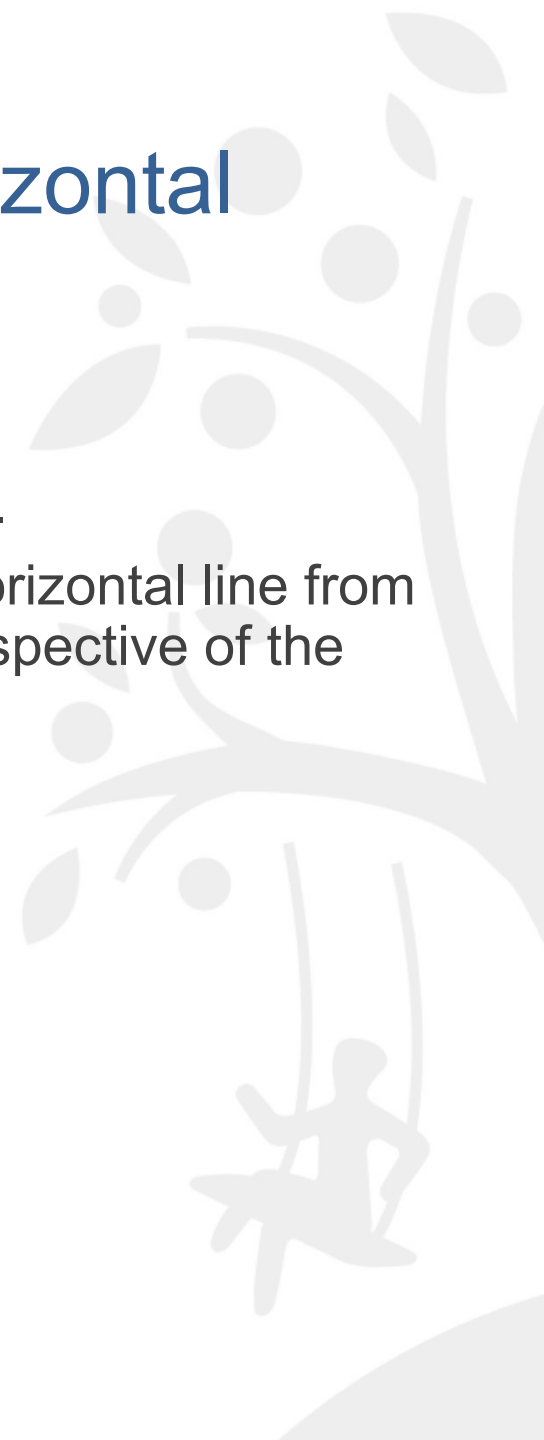
Fine Motor: Imitates Strokes Vertical and Horizontal (cont.)

- A vertical/horizontal stroke is defined as a unidirectional line and not a scribble which is a back and forth stroke.

Scoring:

- 2 points - Child makes both horizontal <u>and</u> vertical strokes, within 30° of examiner's line

- 1 point - Child makes <u>either</u> a horizontal or vertical stroke, within 30° of examiner's line

May follow this item with *Imitates Strokes: Circular* (#34)
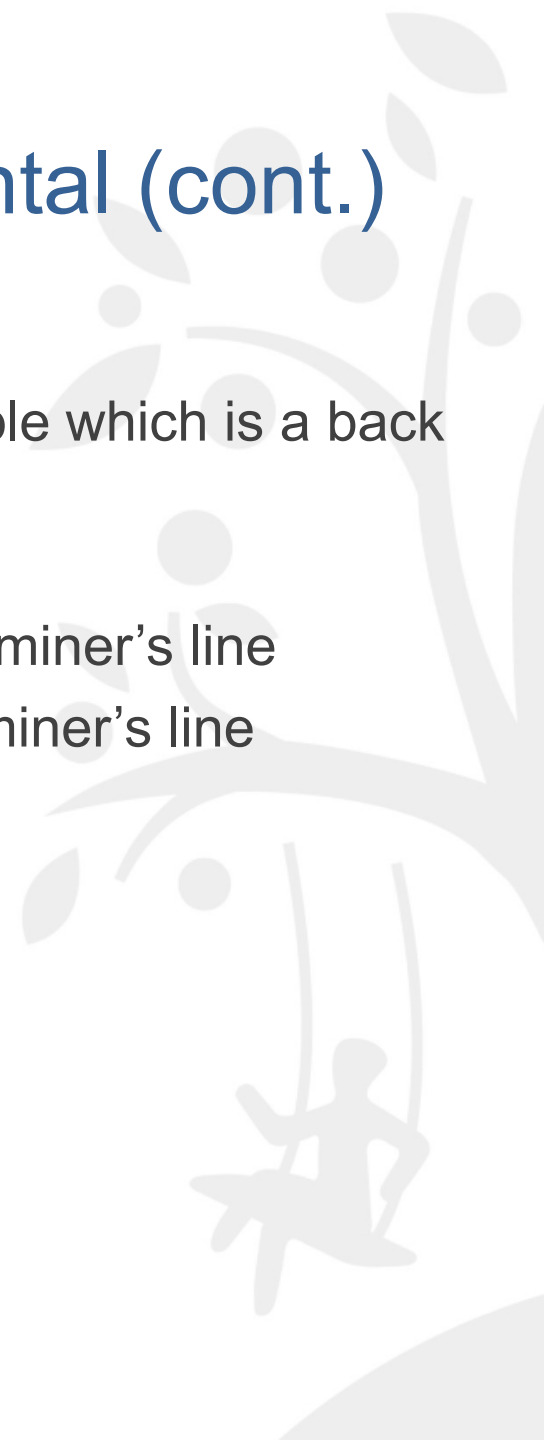
Fine Motor 22: Finger in Pegboard

- Place pegboard in front of child. Point out holes in the pegboard by poking finger into one hole and then poke another hole. Do not guide child's finger or hand.

Scoring:

- 2 points - Child intentionally pokes finger/thumb in <u>at least 2</u> different holes

- 1 point - Child intentionally pokes finger/thumb in 1 hole or pokes repeatedly in same hole
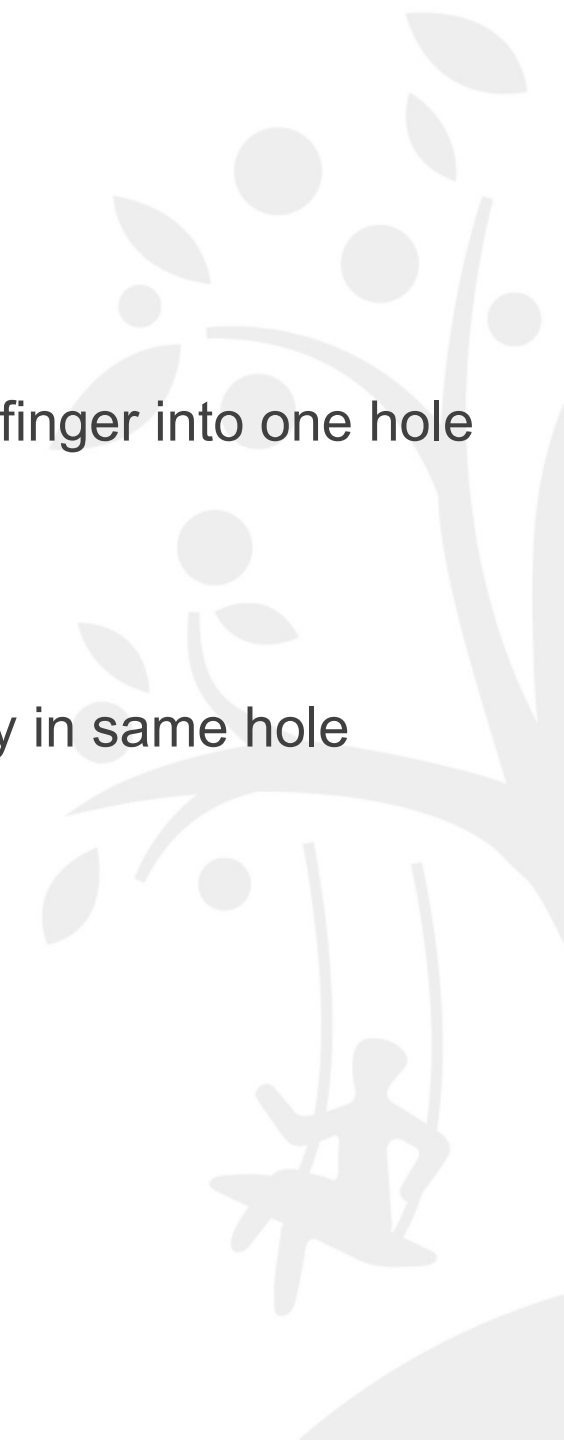
Fine Motor 25: Pellets in Bottle

- Examiner places 1 cheerio in bottle while child watches, then gives 10 cheerios to child and holds bottle while asking child to do the task.

- Do not hand cheerios to child; child must pick them up from table.

- Child must drop cheerios in bottle one at a time. Provide more cheerios to child if they eat some, so child always has 10 cheerios available to drop in bottle during timed period.

- Spread cheerios out so they are not touching and child is able to pick up one at a time

Scoring:
- 2 points - Child places 10 pellets in bottle within 60 seconds, 1 at a time
- 1 point - Child places 5-9 pellets in bottle within 60 seconds, 1 at a time

Fine Motor 24, 30 and 33: Block Stacking Series

- Trial 1: Examiner builds a 3 block tower (keep tower on your side of table), then give child 2 blocks to stack. If child stacks first 2 blocks, then hand child additional blocks one at a time. If child stacks 8 blocks on first trial, do not administer Trials 2-3.

- Trials 2-3: Child is given 12 blocks and asked to build another tower. Do not assist child in building structure.

- Base must be a single block

- If tower falls, do not count the block that causes tower to fall. Only count number to blocks that stood.
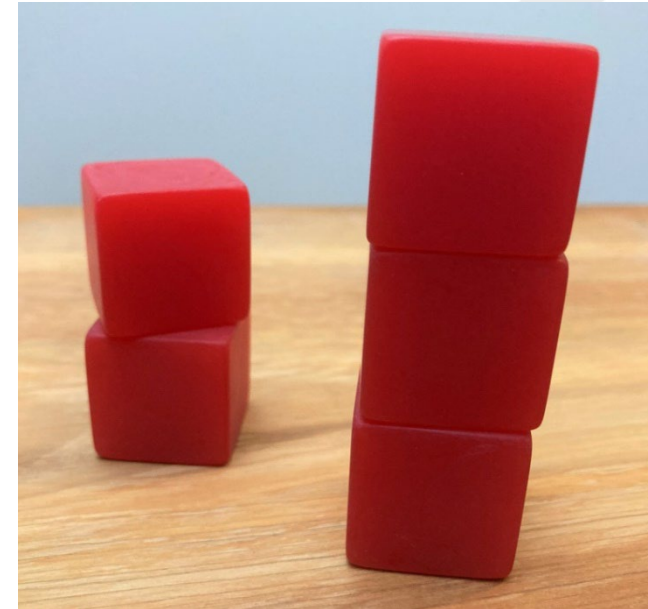
Fine Motor: Block Stacking Series (continued)

#24 Scoring (2 Blocks)

- 2 points - Child stacks 2-12 blocks in any trial
- 1 point - Child stacks 2 blocks but does not leave them stacked, does not release second block, or blocks fall over

#30 Scoring (6 Blocks)

- 2 points - Child stacks 6-12 blocks in any trial
- 1 point - Child stacks 4-5 in any trial

#33 Scoring (8 Blocks)

- 2 points - Child stacks 8-12 blocks in any trial
- 1 point - Child stacks 7 blocks in any trial
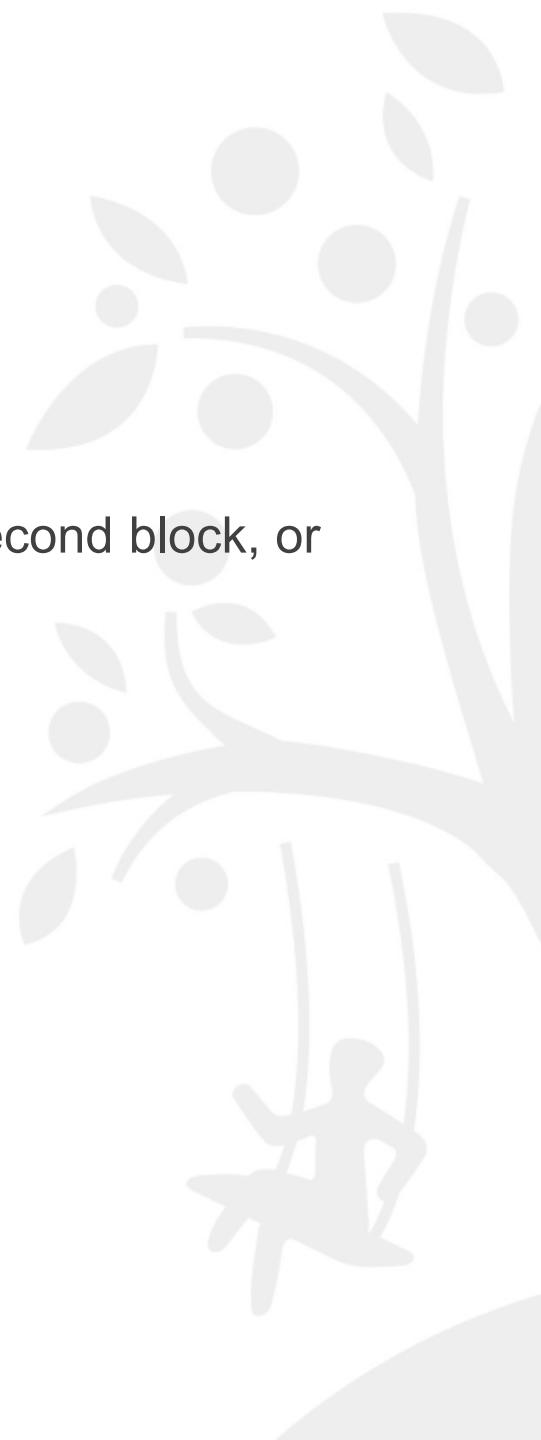
Fine Motor 27: Coins in Bank

- The slot should be parallel to edge of table.
- Coins are placed on the table one at a time, not handed directly to the child.
- Child must pick up coin from table with no assistance from examiner or caregiver.
- After dropping a coin in the bank, the child is presented with next coin.
- Examiner may demonstrate with 2 coins.
- Place coins on a piece of paper if the table is especially slippery.
- Child's response is timed (maximum of 90 seconds).

Scoring:
- – 2 points – Child places 4-7 coins in slot within 90 seconds
- – 1 point – Child places 3 coins in slot within 90 seconds

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Fine Motor 28: Takes Blocks Apart

- Out of sight of child, examiner connects all 6 blocks (Duplos) together and then shows child the stacked unit.

- Examiner demonstrates removing 1 small and 1 large block then reconnects blocks before handing unit to child. Child is asked to take all the blocks apart.

- Examiner can slide disconnected single blocks away from child which may help child focus on removing <u>all</u> blocks from unit.

Scoring:
- 2 points - Child separates all blocks in unit.
- 1 point - Child separates at least 1 block from unit.
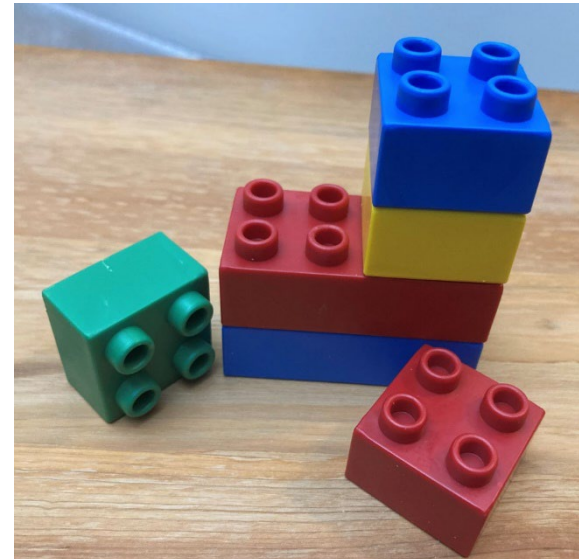
Fine Motor 32: Connects Blocks

- Examiner demonstrates connecting 3 blocks before taking apart the blocks and giving child all 6 loose blocks to connect.

- Do not steady the stack for the child. Child must connect blocks independently.

- To receive credit, at least 2 connector knobs on each block must be aligned correctly and secured to another block.

- Child's response is timed (maximum of 90 seconds).

Scoring:
- 2 points - Child puts all 6 blocks together within 90 seconds
- 1 point - Child puts 3-5 blocks together within 90 seconds
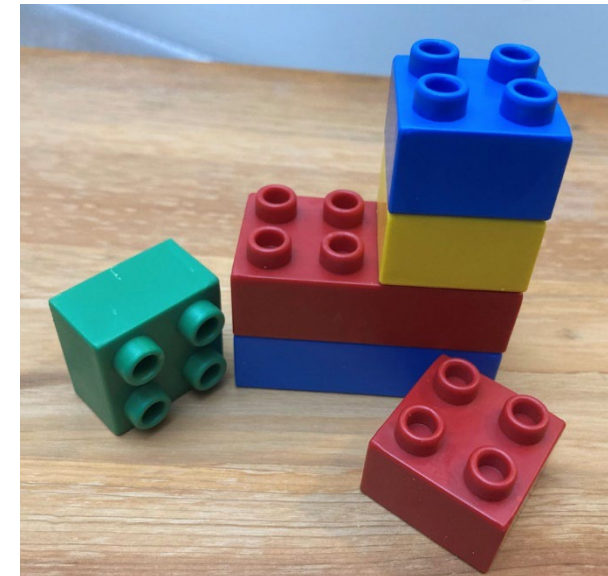
Fine Motor 35: Builds Train

- Examiner demonstrates making a train and describes as they build.
  - *Look how I make a train. Like this and this and this and this.* Place 5th block on top while saying, *And here is the engine. See how it goes. Choo choo* (while pushing)

- Model is left up for child to view.

- Child is given another 5 blocks and asked to copy examiner's train.

Scoring:
  - 2 points - Child places 4 adjacent blocks in a row and 5th on top (5th block does not have to be on first/last block)
  - 1 point - Child places 4-5 adjacent blocks in a row (5th block is not placed on top)
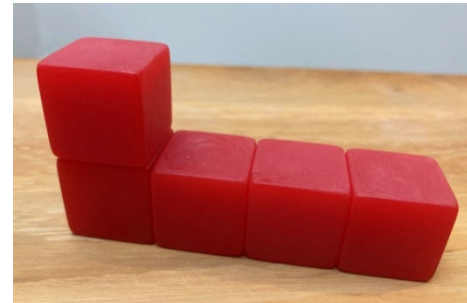
Fine Motor 36: Strings 3 Blocks

- Tie knot on end of shoelace. (B4 is unclear so GSEs determined we should tie a knot for B3 consistency.)

- Examiner demonstrates how to place all 3 blocks on the string, then removes blocks from shoelace and gives to child to try. (Do not describe verbally how to do it.)

- The block is considered on the string if it is 1 inch beyond the tip of the shoelace.

Scoring:
- – 2 points - Child strings all 3 blocks on shoelace at one time
- – 1 point - Child strings 1-2 blocks on shoelace at one time

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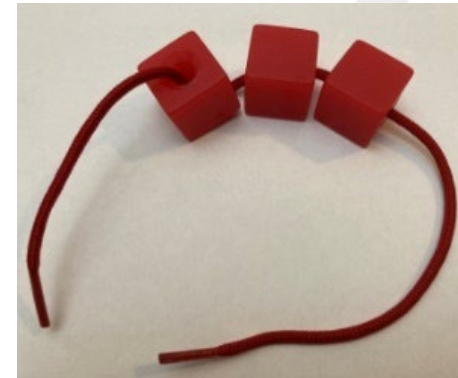
Fine Motor 37: Folds Paper

- Will need sheets of plain paper (4).
- Examiner takes 1 sheet of paper and folds it in half. Leaving folded paper on table, child is handed an unfolded sheet of paper and told to fold it. (2 trials can be administered)
- Paper fold does not need to be pressed or sealed to receive credit and direction of folding (portrait or landscape) does not affect scoring

Scoring:
- 2 points – Child folds paper approximately in half
- 1 point – Child's fold divides paper by less than half (e.g., thirds).
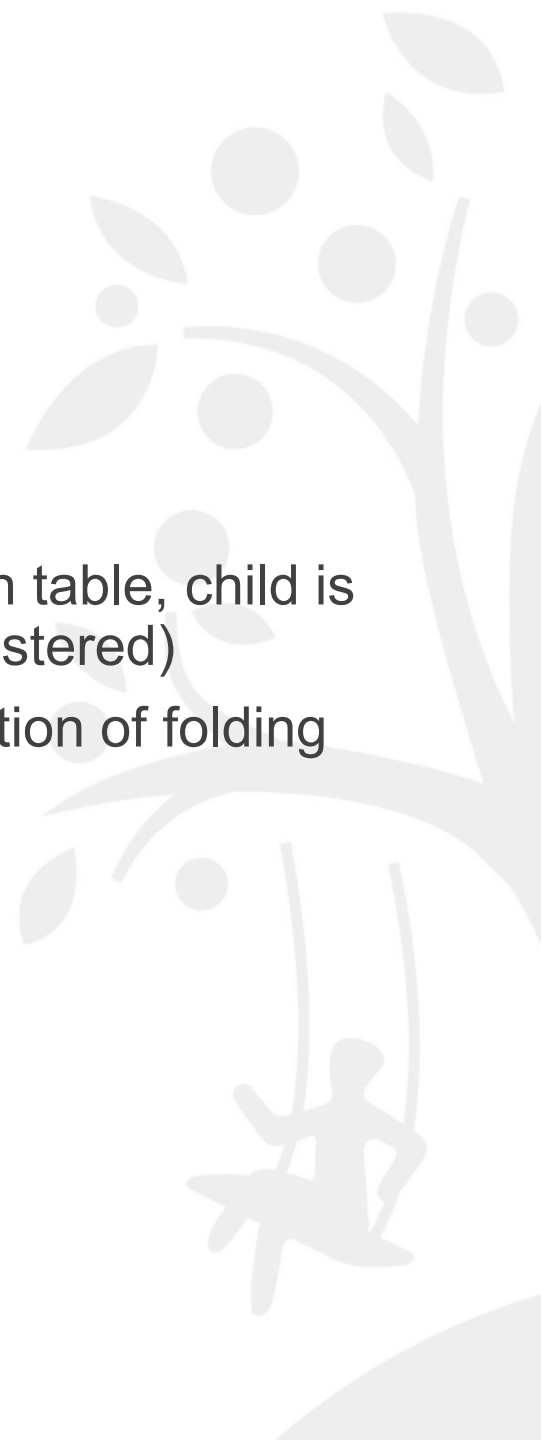
Fine Motor 40: Managing Buttons

- Red sleeve should be buttoned to start. Examiner demonstrates unbuttoning and buttoning the sleeve and describes the actions. Child is then given the sleeve and asked to unbutton it.

- If child successfully unbuttons sleeve, child is then asked to button it.

- If child is not able to unbutton sleeve, examiner unbuttons it and then gives it to child with request to button it.

Scoring:

- 2 points – Child buttons <u>and</u> unbuttons sleeve

- 1 point – Child either buttons or unbuttons sleeve

Very few children are ever successful with this task – very difficult for our age range

Gross Motor

Gross Motor: Administration Preparation

- Ideally, child will be wearing well-fitting flexible-soled athletic shoes.
- If child is wearing slick-soled shoes, flip-flops, sandals, Crocs, or boots, it is preferable to remove shoes and socks for Gross Motor tasks.
- If possible, when scheduling assessment, ask parent to have child wear or bring flexible soled shoes such as sneakers/athletic shoes

Gross Motor: Administration Preparation

- The blue stepping path is used for many of the Gross Motor items.

- Use blue painters tape (or other easily removable tape) to secure path to the floor to minimize fall risk.

This is included in the *Examiner-Provided Materials* in the Bayley 4 manual.

Gross Motor 36: Walks Series - Without Support

- **#36 May be first GM item typically administered in this study**

- If child is not observed walking independently, caregiver holds child's extended arms and encourages child to walk forward. If child demonstrates some coordinated steps, caregiver will release grasp to see if child can walk unsupported.

Scoring:

- 2 points - Child takes at least 5 steps without support and with good coordination

- 1 point - Child takes at least 3 steps without support but without good coordination
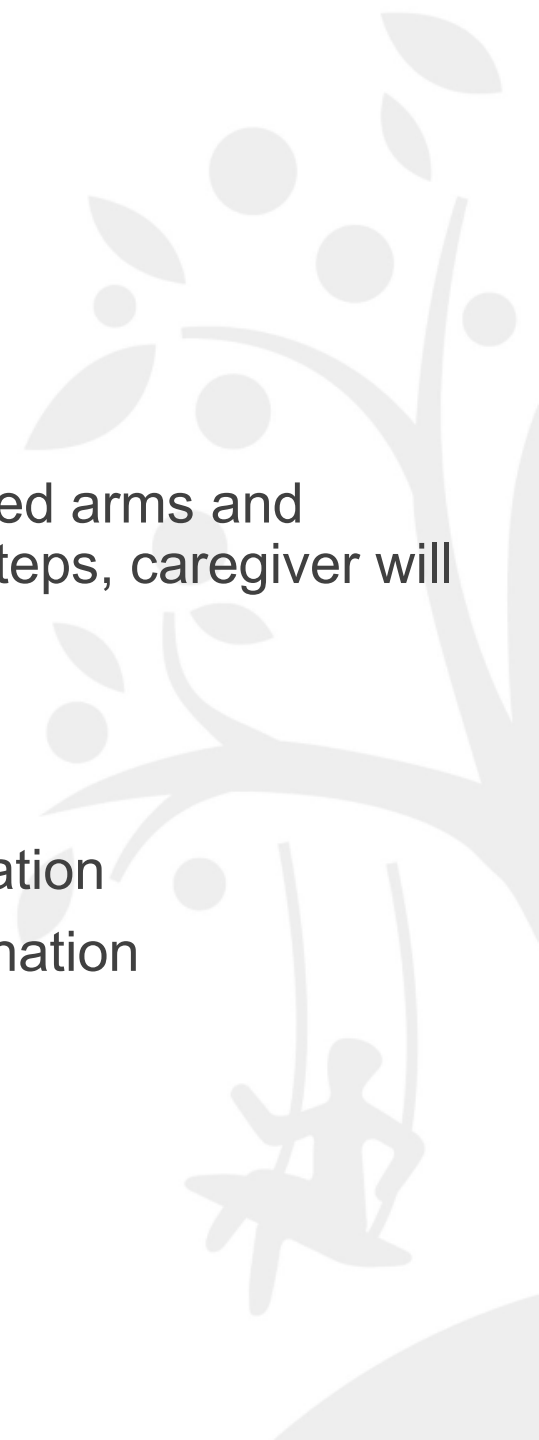
Gross Motor 37: Throws Ball Forward

- Remember to use <u>small</u> ball. Examiner demonstrates throwing ball to child and then encourages child to throw ball.

Scoring:

- 2 points - Child purposely throws ball forward using either underhand or overhand motion

- 1 point - Child attempts to throw ball forward but ball goes straight up or backward

If child resists or does not attempt, then ask ***Caregiver Question:** Is (child) able to successfully throw a ball forward almost every time he/she tries, some of the time, or none of the time?

Gross Motor 39 and 52: Walks Up Stairs Series and Gross Motor 41 and 54: Walks Down Stairs Series

- **<u>FIRST</u>, ask *Caretaker Question**: Does (child) walk **up** the stairs without crawling?

- If no, score 0 and go to next item.

- If yes, then administer item.

*If caretaker's response is indeterminate (e.g., says child is not usually allowed on stairs or is uncertain about child's abilities) go ahead and administer item.

- Support is defined as using the wall or handrail <u>only</u>. ***Child may not put hand down on a stair nor hold an adult's hand.*** Child must remain upright for credit.

- Stand close to catch child if he/she falls, but do not hold child's hand or steady child with your hands.

Gross Motor 39 and 52: Walking Up Stairs

#39 Scoring

- 2 points - Child walks up at least 3 steps <u>without support</u>, placing both feet on each step before stepping up to the next stair.

- 1 point - Child walks up at least 3 steps <u>with support</u>, placing both feet on each step before stepping up to the next stair.

#52 Scoring

- 2 points - Child walks up at least 3 steps <u>without support</u>, alternating feet on each step

- 1 point - Child walks up **2 steps** <u>without support</u>, alternating feet on each step.

Similar scoring criteria for *Walks Down Stairs Series* (#41, #54)
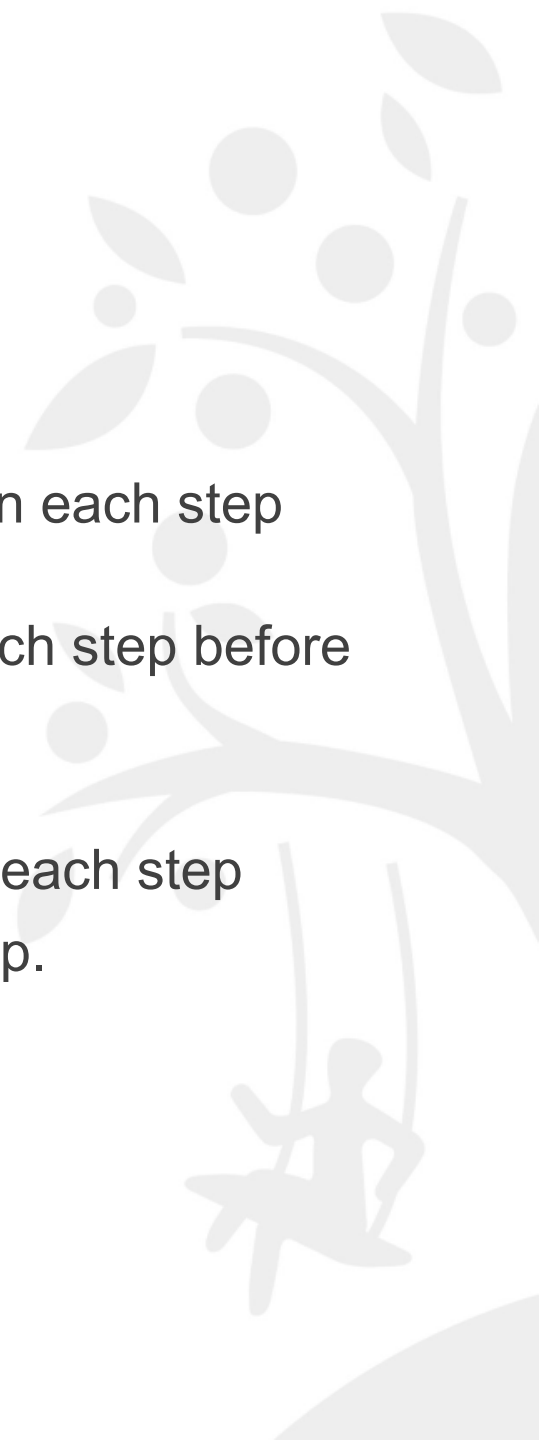
Gross Motor 40: Walks Backward

- Child cannot hold adult's hand nor rely on other support while walking backward.
- Strategies to encourage backwards steps
  - Demo skill
  - Examiner/Parent can initially hold child's hand and start walking backwards, then drop child's hand and encourage continuing – child must take independent steps
  - Playfully pretend to tickle while coming at them; child may back up
  - Play catch and tell child to back up so you can throw ball to them
  - Pretend to be a truck while saying "beep beep beep"

Scoring:

- 2 points - Child takes at least 3 steps backward without support and demonstrating good balance
- 1 point - Child takes 2 steps backward without support and slight loss of balance is permitted

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Gross Motor 43, 49, 56: Balances on Each Foot

- Trial 1: Examiner should stand beside child and hold one hand. Ask the child to lift left foot. Examiner may demonstrate. (Record time of child's response.)
- Trial 2: Repeat but now ask child to lift right foot.
- Strategies
  - Ask to see their shoe
  - Take off shoe and then tell them you need to put it back on; hold up their shoe
  - Tap a toy such as ball held up in front of them; but must not be supporting self on toy

Scoring:

- 2 points - Child balances on <u>both</u> left and right foot with support for at least 2 seconds
- 1 point - Child balances on <u>only</u> right or left foot with support for at least 2 seconds

Following this item, examiner may administer *Balance on Each Foot <u>Without</u> Support Series* (#49: without support for 2 seconds and #56 without support for 6-seconds)

Gross Motor 44: Jumps - Bottom Step

- Child stands on lowest step while examiner is positioned in front of child. Child is encouraged to jump to floor. Do not hold child's hand while jump is attempted, but stay close to catch child in case of loss of balance.

- Examiner may demonstrate (often necessary to elicit understanding of task).

Scoring:
- 2 points - Child jumps to floor with feet together, *at some point* both feet are in the air, child lands with balance
- 1 point - Child jumps to floor with 1 foot leading, *at some point* both feet are in the air, child does not land with balance

If child **resists or does not attempt**, ask ***Caregiver Question:** Does (child) jump from the bottom step and land without stumbling or falling down almost every time he/she tries, some of the time, or none of the time?

Gross Motor 46: Walks on Path - Forward

- Please secure stepping path to floor with blue tape before administering this item.
  - Fall risk if not taped
  - Difficult to score if tape bunches up

- Examiner demonstrates walking forward the entire length.

- Remind child to keep both feet on the path.

Scoring:
  - 2 points - Child takes at least 2 steps with both feet on stepping path and keeps 1 foot on path for at least 5 feet
  - 1 point - Child walks for at least 5 feet and keeps at least 1 foot on stepping path

Gross Motor 48: Jumps – Both Feet

- No equipment is needed for this item.
- Examiner demonstrates a small jump and then asks child to jump from a standing position.

Scoring:

- 2 points - Child jumps off floor with feet together or leads with 1 foot, *at some point* both feet are in the air during jump
- 1 point - Child jumps with only 1 foot in the air

If child **refuses or does not try**, ask ***Caregiver Question:** Is (child) able to jump off the floor with both feet in the air at the same time almost every time he/she tries, some of the time, or none of the time?
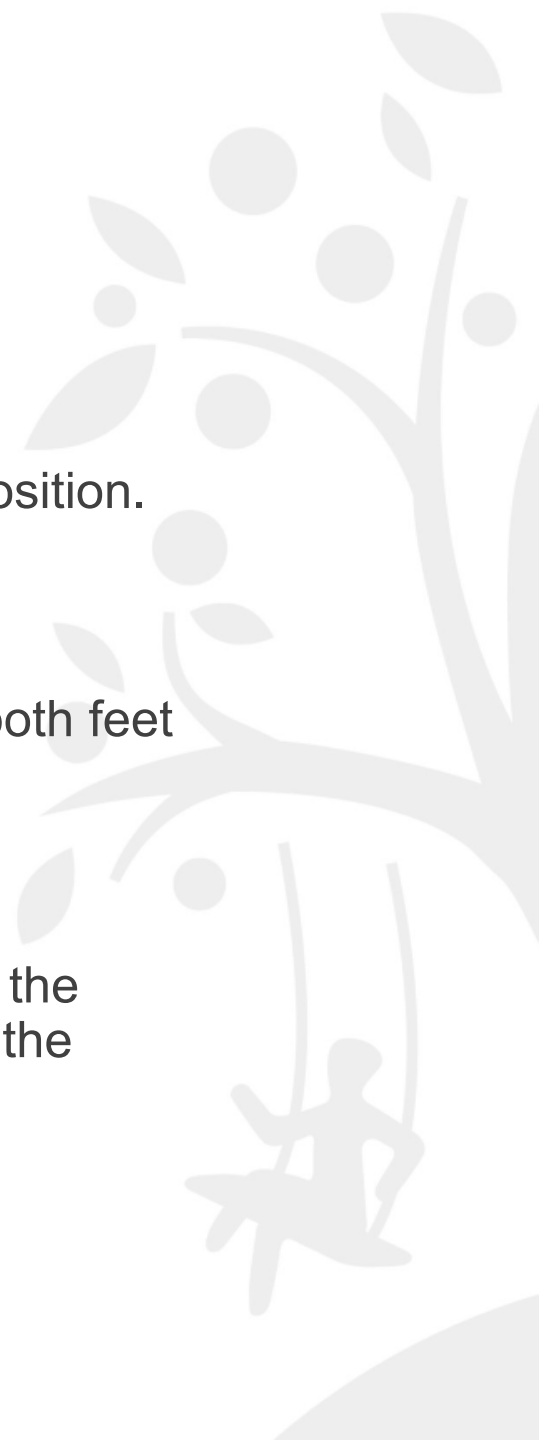
Next Steps: Obtaining Bayley-4 Certification

Reliability

- No more than 1-2 omitted items per subscale (and preferably **none**)

- Research reliability set at .85 *per subscale* and includes calculation of accuracy of scoring <u>*and*</u> administration
  - Inter-rater reliability calculated on **scoring**
    - Scoring 0, 1, 2
  - Reliability also calculated based on adherence to **standardized administration** of tasks
    - How much error is a problem?
      - Major errors versus minor errors
      - Major error defined as error that fundamentally changes the nature of task or difficulty level – "spoiled item"
      - Examples – puzzles; pretend play

Administering a Reliable Bayley-4: Child Factors

- Standardized testing reflects a child's performance *under a standardized set of conditions using a standardized set of toys*

- Children **will not** necessarily demonstrate their *absolute peak performance on all tasks administered*

- Effort, attention, and persistence may vary across test

- Ideally, child will attend well and put forth good effort but slight variability in these factors is *normal and expected*

- *This was also true of children in standardization sample, so is accounted for in norms and scoring*

Strategies for increasing child compliance

- Build rapport first (play social game, use a few non-Bayley toys)
- Be enthusiastic, positive, relaxed and playful
- Adapt your style to match child's temperament/disposition
  - Tone, volume of voice to child's needs
- Praise child for efforts, not accuracy
- Take breaks as needed; allow child to get up and move around; use snacks
- Relocate to floor, different table, etc. if child gets antsy
- Intersperse more enjoyable subtests (e.g. FM) between difficult subtests (RL and EL)
- <u>Never</u> leave child without a toy- swap for next toy, let child hold a toy while scoring

Be Willing to Accept Incorrect Response/Child Failure

We all want children to do well but……

- Resist temptation to
  - Give child clues to correct answers or cue responses in manner not listed in manual
  - Help them in any way not listed in manual
  - Repeatedly present item- can be counter-productive if child tunes you out
    - *Get the child's attention first; present the directions no more than once or twice*

- Be willing to accept incorrect responses/failures
  - Failure is **<u>not</u>** a reason to repeat task – only give number of trials specified
  - Get child's attention first so do not need to repeat
  - If item done correctly with child who is attending – must count failures as failures

- Behavioral compliance declining? May be approaching or at ceiling level of performance
  - Especially true when getting to typical ceiling for children of that age
  - Behavioral resistance may reflect a true failure with a task that is too difficult.

Administering an Efficient Bayley

- Time is crucial – this is a lengthy assessment for a toddler
- Become as familiar as possible with test so you can attend to child, not the booklet
- Only administer necessary items – try not to go past 5 failed items (ceiling)
- **For items with multiple trials, once you have met highest criteria for 2-point score, okay to discontinue**
  - Example – Expressive Language Item 20

Strategies for Learning: **Make a template**

- Make a Bayley Administration Booklet Template for administration until you are **very** familiar with items.
  - Write out oral instructions
  - Describe/Draw material placement
  - Score in pencil and transfer to fresh booklet
  - Erase and re-use original template booklet
  - Use plastic sleeve covers and dry erase
- Should know all items from *at least* one start point below typical start point
  - Most children start at L or M so know all items *at least* from start point K

Practice, practice, practice…….and practice

- Bayley harder to get to point of reliability than most standardized tests
  - Rapid developmental skill attainment in short time (birth to 42 months)
  - Despite item overlap, each age level can be almost like a new test
- Role play with colleague, family member, older child
- Video your administration and then watch your video
  - Compare each item to manual; look for mistakes; write them down
- Observe colleague's administration
  - Look at manual to find mistakes; discuss errors or points of disagreement
- Examiner drift is common
  - Refer back to manual *prior to and after* every assessment to review your administration and scoring
 - Video your administration yearly

Bayley-4 Examiner Next Steps

- Make Video of child in study age range (approximate, but within 3-4 months)
  - Video must show child, table with materials in view, and examiner (examiners hands at a minimum)
  - Videos taken from the side with camera pointed down towards table tend to be best
  - Make sure audio is of good quality

  - **Video of administration will be due at least 2 months prior to first child entering the test window to allows for second submission if needed**

  - **If site has two examiners, please try to spread out video submissions by at least a few weeks**

Bayley-4 Examiner Next Steps

- Submit materials to Box Folder set up by Michelle and Candace
- Video <u>Certification Submissions</u> must include:
  - Copy of de-identified Bayley test booklet with scoring on front page
    - Scan only pages used; can omit pages not used
  - Self-Critique and narrative identifying all errors
    - We are developing form for self critique
    - MUST watch your own video and compare your administration to manual <u>prior</u> to submission
    - Describe your errors and any reasons/challenges
  - Videos of all subtests
    - Submit one full video of all sections
    - Or clearly labeled files if separate video segments –
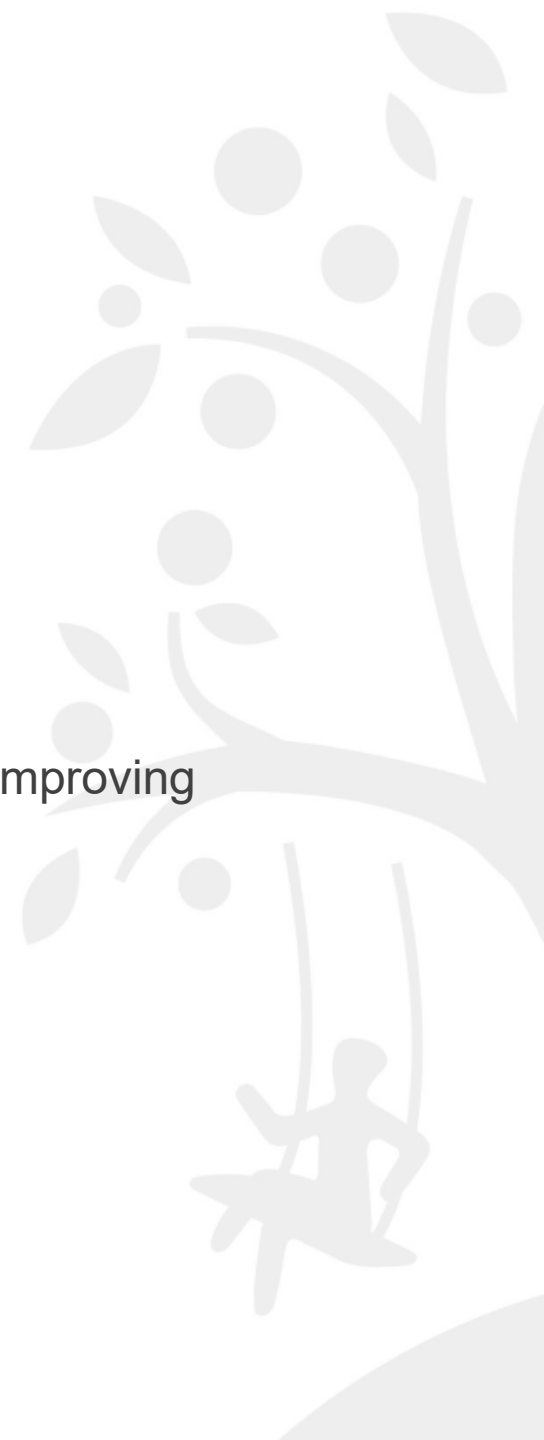   - No more than 5 segments (one for each subsection)
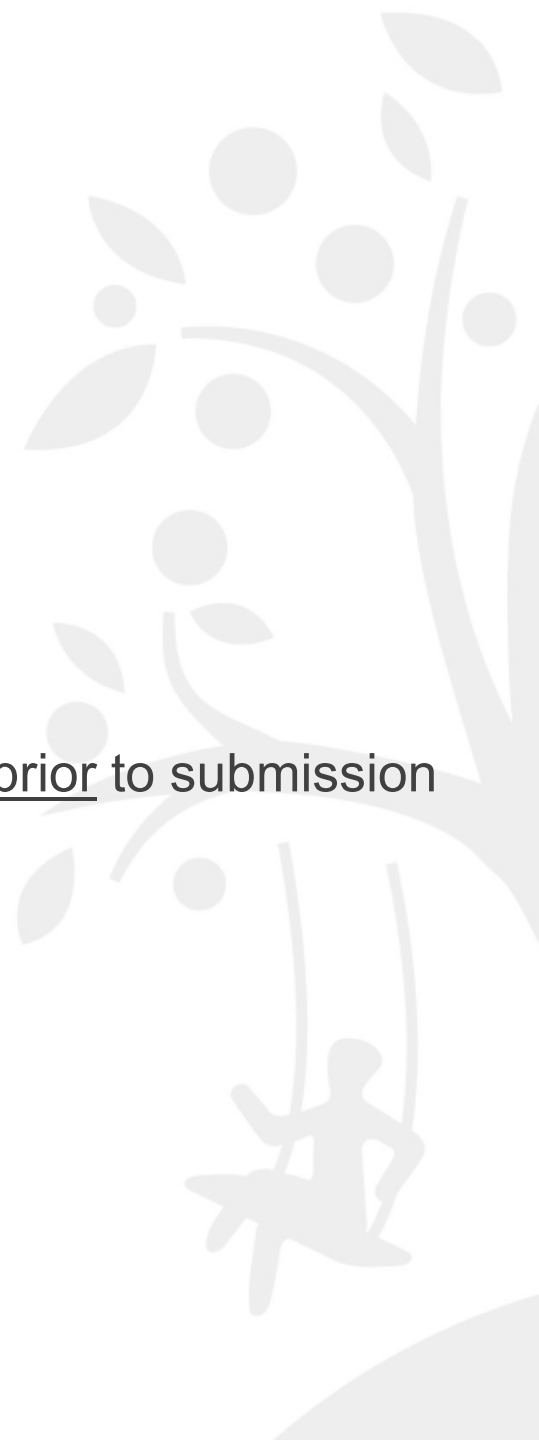
Bayley-4 Examiner Next Steps

- Further training materials:
  - Box Folder
    - Training recordings
    - Video of administration
    - Gold Standard Consensus Document – detailed document containing:
      - Item by item information
      - Common errors and challenges
      - Consensus decision on vague scoring issues
      - Tips and strategies for eliciting difficult items

Gold Standard Examiner Responsibilities

- We will review your videos, self-critiques, and scoring booklet
  - within +/-3 weeks of submission
  - Ideally sooner, but depends on number of videos submitted in a give week
- Calculate examiner reliability for administration and scoring per subscale
- Email examiner a feedback letter noting if certification achieved
  - Also includes discussion of strengths, weaknesses, and errors, and strategies for improving administration
- If reliability not met, we will request another video of all or some subtests
  - Thus, only submit video once you are truly ready

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ECHO ▸ A program supported by the NIH

Contact Us – We welcome your questions!

Gold Standard Examiners

We have served as trainers, GS examiners, and consultants for many clinical trials and multi-site studies for the past 15+ years

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Questions/Comments?