

ANGELMAN SYNDROME BAYLEY-4 TRAINING MANUAL



cognitive



receptive



gross



fine



expressive

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Introduction

The Bayley Scales of Infant and Toddler Development, Fourth Edition (Bayley, N., & Aylward, G. (2019). *Bayley Scales of Infant And Toddler Development: Technical manual* (4th ed.). NCS Pearson.) is a standardized developmental assessment with norms provided for children birth to 42 months of age that measures cognitive, expressive communication, receptive communication, fine motor, and gross motor abilities. It can be administered to individuals with developmental disabilities beyond these normative age ranges when significant global delays are present to estimate a developmental age equivalent and growth scale values based on raw scores.

Because individuals with Angelman syndrome (AS) present with substantial developmental delays, this population should be evaluated with measures that are suited for their developmental level rather than their chronological age. Hence, the Bayley is a suitable tool that can provide an estimate of developmental functioning in areas related to cognition, communication, and motor skills. This manual has been developed for assessors to provide guidance for administration of the Bayley-4 to individuals with AS within the context of clinical trials, natural history studies, and clinical practice.

The purpose of this training manual is to:

1. Provide clarification of instructions to standardized administrations across sites and raters
2. Propose and standardize the use of reasonable item-level accommodations based on what is allowed in Appendix C of the Bayley manual

Manual Development

The recommendations and accommodations suggested in this manual were developed through a comprehensive systematic procedure, including in-depth interviewing of active clinical and research administrators, item-level review, and a meeting with an expert in the development of the most-recent edition of the Bayley-4.

Summary of Interviews. Structured interviews were conducted with nine professionals who had experience administering the Bayley-4 to clinical trial participants with AS. Interviews focused on gathering information regarding challenges and barriers to successful administration and which items the raters found more difficult to administer or score.

Summary of Item Review. Every item on each domain across the Bayley-4 was reviewed by at least two experts in psychological assessment and AS and any concerns regarding how an item might be administered or scored were noted, as were suggestions for how to make the item clearer with regard to intent (determined through review of the Bayley-4 manual). Items for which at least 10% of the natural history study sample increased or decreased between assessments were prioritized for review.

Summary of Meeting with Pearson Representative. Findings from the interviews and the item analysis were shared with an expert trainer (Dr. Katherine Gustafson) endorsed by Pearson, and final recommendations for item clarity were determined. Consideration for staying within the parameters of the tests was prioritized, as were allowable modifications or clarification to assist with standardized instructions for raters and AS-specific needs.

This effort resulted in intentional and critical guidelines that should be followed as closely as possible to ensure standardized administrations. Any deviation from the regular administration protocol should be **noted on the testing protocols** and in the test report to ensure correct interpretation of the results.

General Recommendations for Clinical Trials

- The Bayley-4 should not be administered more frequently than every 3 months to maintain validity and reduce the chances of practice and fatigue effects. Pearson recommends that children younger than 12 months can be tested **every 3 months**; those older than 12 months should not be tested more frequently than every 6 months.
- The Bayley-4 should not be administered on the same day following any invasive or stressful procedure (e.g., they should not receive study drug or blood draws right before the Bayley administration).
- The Bayley-4 should be administered early in the day unless the caregivers have indicated that mornings are not good for the individual.
- The Bayley-4 should not be administered if the child is fasting for anesthesia or after a long day of traveling where sleep could impact performance.

Examiner Considerations

Administrator Qualifications

- Individuals with graduate-level training/courses in child development and testing and measurement AND with work experience with patients with AS or similar phenotypes
 - Education: BS/BA or higher
 - Prior scale experience: Minimum of 15 prior administrations of Bayley or similar scale of child development using structured, play-based assessment AND
 - Minimum of 3 years of experience working with individuals with AS or similar phenotypes in clinical or research settings
 - Education: MD/DO/PhD/PsyD
 - Prior scale experience: Minimum of 10 prior administrations of Bayley or similar scale of child development using structured, play-based assessment AND
 - Minimum of 2 years of experience working with individuals with AS or similar phenotypes in clinical or research settings
 - An understanding of typical developmental trajectories and behavior is of high utility when administering the Bayley-4
 - Ideally, experience administering the Bayley or similar developmental/play-based assessment
- Experience testing patients with AS or similar phenotypes

Training Procedures

The following steps should be taken for all administrators prior to assessing a patient/participant:

1. Review the Bayley-4 Administration Manual and this AS-specific administration manual.
 - a. Pay close attention to the Bayley Administration Manual: Chapter 3, pages 29–30, for basal/ceiling rules and Chapter 4 for the administration instructions and scoring criteria for different items.
2. Review training videos with examples.
3. Develop a personal cheat-sheet by marking up a template booklet to provide personalized cues to remember important administration details (see figure for example).
4. If the assessor does not have any prior experience (i.e., at least 1 year experience) administering the Bayley,
 - a. Roleplay a full assessment with at least five volunteers to achieve fluency.
 - i. The volunteers do not have to be young children; any practice is good practice.
 - ii. This practice should focus on gaining comfort and fluidity with the materials.
 - b. Learn the items, know the test as best you can prior to actual administration!
 - c. If feasible, observe and score an administration led by an experienced administrator and check scoring against the experienced administrator.

Item	Baseline	Scoring
1. Calm When Picked Up	3 items: 10 items If child is crying, screaming, or fussing when picked up, do not score this item.	1 2 3 4 5 6 7 8 9 10
2. Looks at Object	3 items: 10 items If child looks at object for 2 seconds or more, score this item.	1 2 3 4 5 6 7 8 9 10
3. Follows to Rattle	3 items: 10 items If child follows rattle for 2 seconds or more, score this item.	1 2 3 4 5 6 7 8 9 10
4. Discriminates Between Shapes	3 items: 10 items If child looks at object for 2 seconds or more, score this item.	1 2 3 4 5 6 7 8 9 10
5. Looks at Comprehension	3 items: 10 items If child looks at object for 2 seconds or more, score this item.	1 2 3 4 5 6 7 8 9 10

- d. Submit recorded administration for feedback and certification.
 - i. This submission should include a self-critique form and a scored protocol.
 - ii. *A certified reviewer* will then complete a fidelity measure to provide certification.
- 5. Annual retraining should happen through a review of an administration (live or via video) at least annually.
- 6. A listserv should be established for raters to use to get questions answered or brainstorm how to score a specific item as needed.

Preparing for Administration

Setting up the Space

Taking the time to set up the physical space is very important to help with fluidity of administration and to decrease frustration with administration, the participant, and their caregiver(s)

Organizing the Kit

The Bayley-4 kit has a wide range of materials used across administration to elicit participant response. Organization and easy access to materials is critical for fluid administration, enhancing validity and decreasing time that can lead to participant frustration and disengagement. Included are some examples of how to organize the Bayley-4 kit for optimal access.

Use an organizer or compartmentalized storage tray for materials, so all items are within reach and separated according to task. A tub can be really helpful to keep all flat square sized materials and larger toys organized.



Supplemental Materials

Keep the kit well-stocked with any supplemental materials (e.g., keys, box of Cheerios, blue tape for stepping path facial tissue, clipboard, plain paper, stopwatch/timer, Dycem). See page 16 of Bayley-4 Administration Manual.

When working with individuals with AS using the Bayley-4, a range of factors may prove to be a barrier to engagement with standardized materials (e.g., age of participant, accessibility, interest). As such, and in collaboration with expert trainers, a list of acceptable supplemental materials is presented below.

Of key consideration when supplementing a material or manipulative on the Bayley-4 is ensuring that whatever item is used does not change the level of difficulty or the target skill being measured.

- Instead of Cheerios, M&Ms or similar sized keto snack (e.g., freeze dried apple piece) can be used.
 - **Note:** Be sure to ask caregivers ahead of time what the child can or cannot eat and be prepared with options.
- Colorful beads
- Dried beans

Room Setup

- Set up room and materials in advance.
 - Get out items needed and have the next set of items ready to go.
- Clear the room of possible distractions (e.g., close window shades if outside sights/sounds could be distracting, remove objects not needed for testing, avoid rooms with sink/water if feasible, or cover the sink so it is not distracting to child).
- Keep testing items that are not in use enclosed in their case and out of reach and view of the examinee.

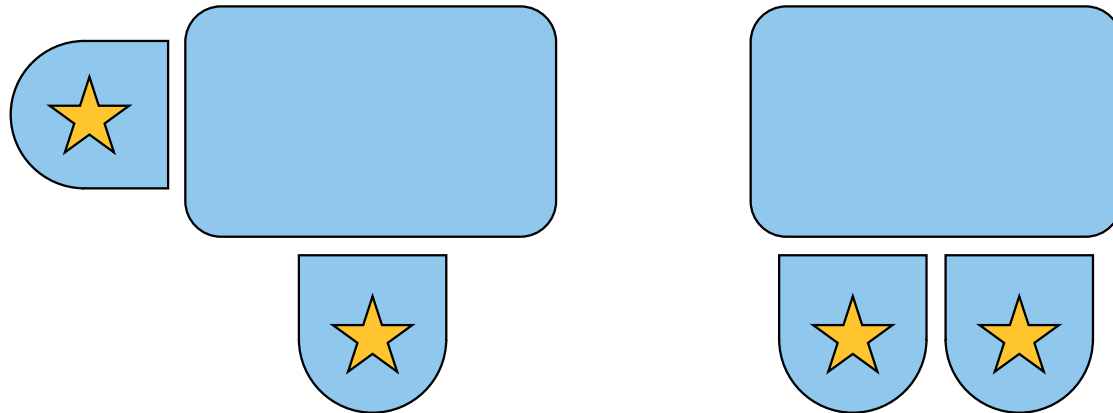
Seating Arrangements

- Testing will ideally be conducted at a tabletop with the child seated in a supporting chair or stroller (a chair with arms is necessary).
 - Use a Rifton chair if available (for younger individuals) or an adjustable table



- Child may stand at the table or sit on the floor if they cannot sit at a table.
 - There are items for which the child must be seated to complete.
- Ensure that the child's Augmentative and Alternative Communication (AAC) device is accessible at all times.

- Best practice is for the examiner to sit next to rather than across from the individual. The examiner may also be positioned at an adjacent side of the table (examples of seating arrangements below). Use seating arrangement that best facilitates rapport and compliance.



- For children who are at risk for elopement, ensure testing room doors are closed and monitored and that the examiner is between the individual and the door. The table should be a color that is NOT red. If the only available table is red, place a different colored mat under the blocks to avoid visual confusion.
- Stimulus book can be propped up or laid down flat depending on examiner preference and ease of reach for the participant.

Presence of Others

For more guidance on the role and integration of the caregiver, see Bayley-4 Administration Manual, pg. 32.

- Ideally, the caregiver will be in the room during testing.
- Some items require the caregiver's presence.
- Some items should be administered by the caregiver.
- Caregivers can be asked questions to score specific items.
- See section on caregiver guidance/participation.
- If the child is highly distracted with the caregiver in the room, the caregiver can leave, but ask them to stay nearby and available to answer questions as needed.
- Ideally, no more than two administration professionals should be in the room.
- Note on the assessment form who was in the room during testing.

Considerations for Interactions and Suggestions for Behavioral Support

As with any participant, establishing rapport prior to starting an assessment and being able to observe and monitor their behavioral reactions, changes, or fatigue as the assessment progresses is important. This section provides guidance for support when doing the Bayley-4 with individuals with AS.

Role of the Examiner

- The examiner, not the child, needs to be in control of the session and the assessment.
- Be mindful of random behavior/guessing and repeat or query if needed to ensure of accuracy of score.
- Individuals with AS have delayed processing; for untimed items make sure to give sufficient time to respond. For timed items, allow the child to respond if they are still processing/working passed the time limit but do not give credit if it takes longer than allowed.

Establishing Rapport

- It may be helpful to give the child a few non-Bayley toys as a warm-up strategy.
- Show a positive and engaging demeanor and enthusiasm with the child.
- Spend the time with the parent/caregiver and child without any demands.
 - Integrate toys and a calm presence during this time.
 - Ask caregiver to gauge participants' readiness to get started.
- Use reinforcement and motivators as needed (check with caregiver regarding food as motivator).

Use of Breaks

- Try to finish the testing within a single day.
 - If it is not possible, schedule a follow-up visit to complete testing as soon as possible, preferably within 2 days of the first administration session.
- Take as many breaks as needed, including snack breaks and sensory breaks (e.g., take a walk, swings, time with iPad).
- On-task behavior will decrease as the testing session goes on (thus, a shorter administration time is ideal).
- Ideally, breaks will be taken in between scale administration.
- Use breaks to observe or request gross motor skills.
- Allow toilet breaks when needed (and observe gross motor behavior on the way to the toilet).

Sensory Issues

- Be mindful of sensory issues or needs the child may exhibit, and make accommodations as needed (e.g., use of air cushions, active seat, access to mouthing tools to minimize desire to mouth testing items).
- Avoid unnecessarily touching the child, as it can be more triggering than assuring.
 - In these cases, consider redirecting attention by using gestures or by bringing objects into the visual field of the child.
- For children with known auditory sensitivities, limit loud or bothersome sounds in the environment.
 - Consult with the attending caregiver and consider use of white noise when beneficial.

Medical Notes

- Check whether the child wears glasses or hearing aids prior to the visit and ensure that the child or caregivers bring these items for the visit. Take note of use of glasses or hearing aids during the visit.
- Also check whether the child regularly uses any braces/Ankle-Foot Orthosis (AFO). Ensure that the caregivers bring it to the visit; they should be worn during testing.
- Before the visit, ask about the individual's seizure history and inquire about the likelihood of current convulsions occurring and whether a seizure plan is in place.
- Take note of medication (e.g., anti-epileptic drugs, stimulants) that the individual has taken on the day of testing.
- If convulsions occur, report these on the record form.
- Discontinue testing after seizures, and report the event accordingly. Testing can be resumed the next day if the individual has returned to baseline functioning.

The Role of the Caregiver

The caregiver plays an important role in the Bayley-4 administration by providing information, providing behavioral support guidance for the child, or just acting as a calming presence for the participant. The following are suggestions for engaging the caregiver during administration while staying within fidelity parameters.

Caregiver Participation

Prior to the Assessment

- Ask the caregiver how [child's name] is doing today coming into the Bayley. It is important to check whether the child slept well the previous night or had a busy morning prior to starting the Bayley testing. Reassure them that, if they or their loved one with AS had a long night or has had a long day, you will all work together to make the process as smooth as possible.
- Set the stage for testing with the parents by acknowledging that the test involves materials that may be designed for younger individuals but are designed to evoke interest and allow us to assess how the child engages with such materials and objects. Some of the tasks may be easy for a child and some may be difficult; some motivating, and some not. We do not expect all individuals to get through all the tasks.
- Ask the parents to avoid giving any cues or prompting unless the examiner asks them to, as we would like to get a sense of what the child can do all on their own.
- Help reassure caregivers by explaining that this is a standardized assessment, and therefore, the goal is NOT to capture their child's peak performance, but rather how they interact with the materials in a standardized testing environment.
- Each site should copy and print the following information. It can either be provided to the caregiver directly or reviewed with the caregiver prior to the Bayley with the goal of orienting them to the administration and expectations.

During the Assessment

- During the assessment, if parents/caregivers provide any direct or indirect support/prompting, use reassuring statements such as “we want to see what they can show us in a structured setting without your help” or “we’re just looking to see what they do on their own.”
- Have a copy of page 39 of the Bayley-4 Administration Manual open for reference for the parent.

Let the caregiver guide the rater on when the child may need a break; they know their child best.

Caregiver Report Items

Pearson, the Bayley-4 publisher, has outlined guidelines on how to administer items that are specifically caregiver report items, as follows:

- For items with a choice between a structured administration/observation score or a caregiver question, please prioritize scoring based on the administration/observation initially. Then, proceed to follow the guidance provided below:

The Caregiver Question should not be used in every item where it is an option or where a score of ‘2’ is not assigned. The intent of the caregiver questions is not to optimize scores as much as possible. Rather, they are to be used when a response is ambiguous, the child is not cooperative, or the behavior may have a greater likelihood of occurring in familiar surroundings. Frequent discrepancies between what is observed during testing and the caregiver question responses raises questions regarding the validity of Caregiver Question scores, and clinical judgment should guide interpretation. <https://www.pearsonassessments.com/store/usassessments/en/Store/Professional-Assessments/Cognition-%26-Neuro/Bayley-Scales-of-Infant-and-Toddler-Development-%7C-Fourth-Edition/p/100001996.html?tab=faqs>

To summarize, best practice for caregiver report items is as follows:

- Do Use:
 - When response is ambiguous
 - For example, if the child does not turn pages of the book during the session, you can ask if they do it at home.
 - When examinee is not cooperative
 - When the environment does not allow the examinee to participate fully
 - For example, if the child is quiet during the testing because it is a new environment and the clinician has not heard the range of vocalizations
- Do Not Use:
 - In every item with an option for a caregiver question
 - As a substitute for clinical judgment/observation
 - To improve a score in contrast to what has been observed
 - Goal is not to optimize scores, but to clarify a score when a response is ambiguous.
- When using caregiver questions, please read the questions verbatim with all the response choices.
- Note that, just because an item may have been achieved based on caregiver question/during a previous assessment, that may not be the case for the current assessment, and attempts to gain information via direct administration or observation is always preferred.

After the Assessment

Obtain feedback from the caregiver to see whether the performance today was representative of that seen at home. Obtaining feedback can be done across the assessment or once the assessment is completed. The goal of obtaining feedback from parents is to assess whether the parents think the clinician got a representative assessment of skills for the different Bayley domains.

- Complete the behavior/representativeness form (see Appendix X) with the caregiver—for each of the scales, the clinician should ask the caregiver whether the clinician captured a representative assessment of the individual's typical performance in that domain and note it.
- Ask the parent or caregiver whether the individual is familiar with the materials presented or whether they have encountered such materials previously at home or at school.
- Ask the caregiver: “What items does the individual do at home that we did not see today?” “Was there anything about their performance today that surprised you?” “Why do you think they performed differently than usual today?”
- Raters will use this information, in combination with their clinical judgment, to provide sponsors with feedback regarding the validity of that test administration.

Critical Guidance for Administration

Administration Techniques

Reminder: Knowing the test is critical for behavior management! Fluidity with materials and familiarity with items will significantly change the pace of the exam, decreasing opportunities for fatigue and in turn challenging behaviors.

- Use direct declarative wording and commands when addressing the examinee.
- Stay in control of the materials—place them appropriately and reveal them only when you have gained the child’s attention.
- Place test materials within the child’s visual field.
- Use motivating materials (i.e., object of interest) when permitted. For example, use a motivating material when hiding the object under the cup and gaining access from beneath the clear plastic box (see specific guidance in item review below).
- When other toys or objects become distracting to the child, remove them while temporarily redirecting the child’s attention to another test activity or novel item.
- Examiners should keep a quick pace of administration to enhance attention and focus of the child. When the child is busy exploring one material, the examiner should prepare the next item and exchange the new material when removing the previous item.
- If a child is particularly attached to a toy, you may keep it in proximity but not central to their visual field.
- If appropriate, all related test items and series items can be completed at the same time in the order of the test (e.g., block stacking series, ring with string). Please see page 22 of Bayley-4 manual for full listing.

- Sometimes, it can be helpful to have the caregiver gently hold the hands of the child when providing item instructions (e.g., when the examiner is hiding the object under the cup).
- For items with multiple trials, once the child reaches the highest “pass,” move on to the next item to reduce assessment time.
- Behavior Checklist (Appendix X)
 - Complete the behavior observation inventory after the assessment to capture whether the performance during the assessment was an accurate representation of the child’s ability.

Start Points, Basal and Ceiling Rules

Understanding start points and the basal and ceiling rules is critical for accurate scoring and administration.

Start Points

For initial/baseline assessment:



For infants 12 months or younger: Start at **start point A** (Item 1) for all domains.



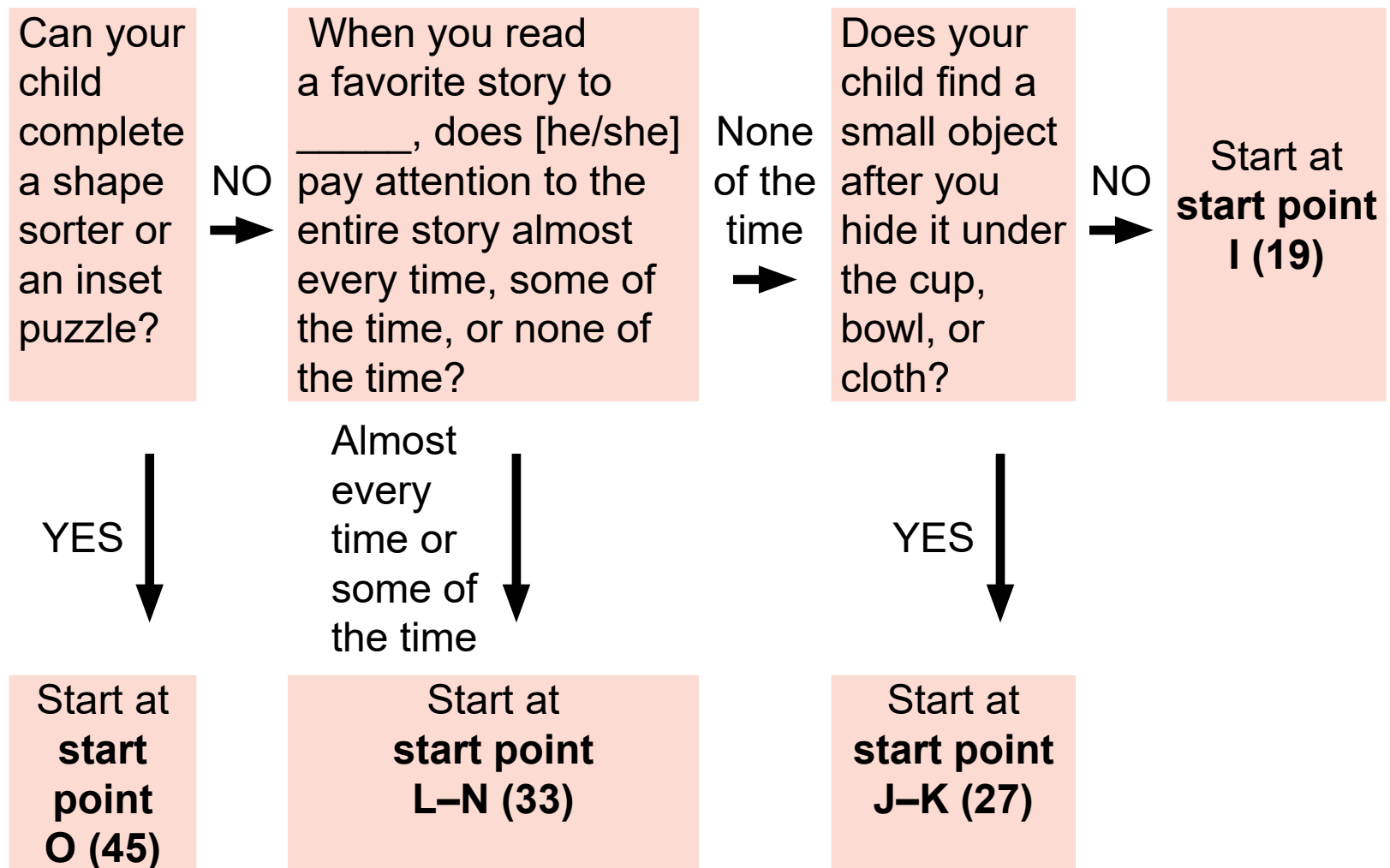
For children 13 months or older: Follow the algorithm.

Note: If parent does not know the response to an algorithm question, the “no” path should be followed.



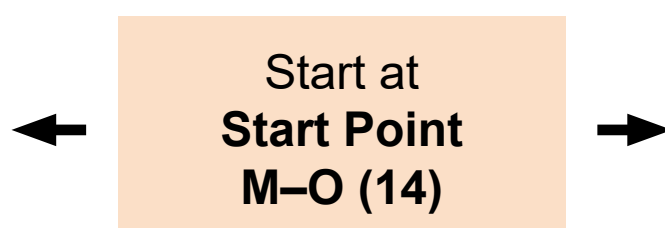
Cognitive

Ask caregiver these questions and follow algorithm:



Receptive Communication

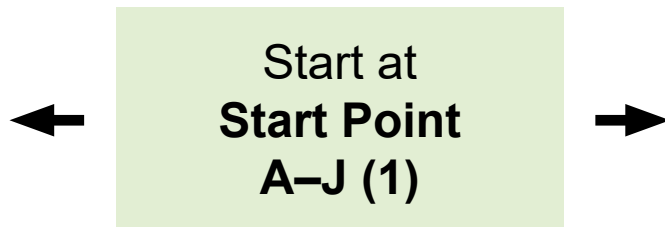
All testing should begin at start point M-O (14).





Expressive Communication

All testing should begin testing at start point A–J (1)



Fine Motor

Can your child hold the crayon and make a mark on paper?

NO →

Does your child transfer an object from one hand to the other?

NO →

Start at
**start point
F–I (9)**

YES ↓

Start at
**start point
M–N (18)**

YES ↓

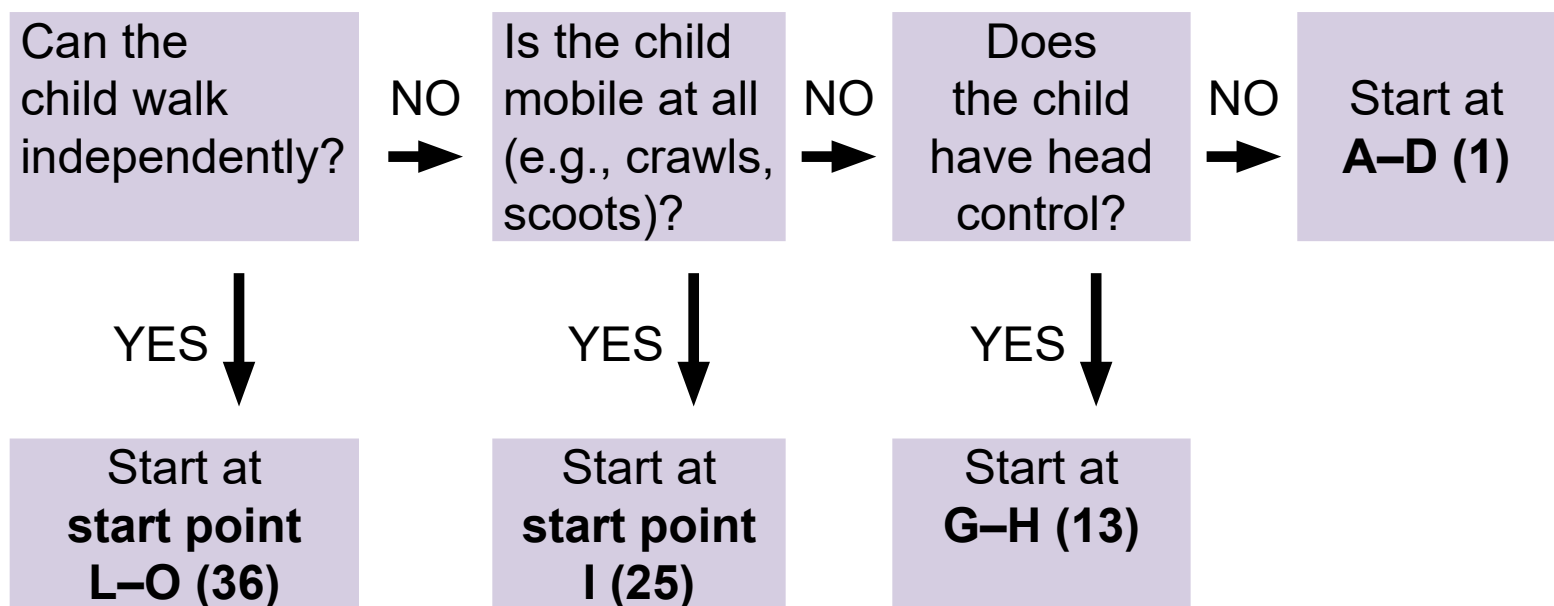
Start at
**start point
J–L (13)**



Gross Motor Scale Starting Point

If walking independently, begin testing at start point L–O for all subjects.

- Whether the child walks or not, place child on the floor/out of seat or wheelchair and encourage them to move however they normally would. This observation can help determine start point.



Basal/Ceiling Rules

- Use the **Highest Basal** regardless of start point:

- Identify the highest basal: Find the last start point (i.e., the letter like O–Q) wherein the child receives a score of “2” for three consecutive items. This start point is considered the highest basal.
- Identify the lowest ceiling: Where the child receives a score of “0” for five consecutive items.
- In total score calculation: Any items before the highest basal (even if they had a different score) still get a score of 2, then add up the remaining scores as noted until you reach the ceiling. No score after the ceiling is considered in the total score calculation.
 - See Figure 3.9 from the Bayley-4 manual below as an example. Reference page 29 of the Bayley Administration Manual for more information
- Note: The Bayley-4 Administration Manual states that, if a child starts at the age-appropriate start point, you should take the **FIRST** basal, not the highest. **This will not pertain to participants with AS.**

Item	Response	Score
1. Reaches for object in container	None	0
2. Reaches for object in container	None	1
3. Reaches for object in container	None	2
4. Reaches for object in container	None	1
5. Reaches for object in container	None	2
6. Reaches for object in container	None	1
7. Reaches for object in container	None	0
8. Reaches for object in container	None	0
9. Reaches for object in container	None	0
10. Reaches for object in container	None	0
11. Reaches for object in container	None	0

Item	Response	Score
1. Reaches for object in container	None	0
2. Reaches for object in container	None	1
3. Reaches for object in container	None	2
4. Reaches for object in container	None	1
5. Reaches for object in container	None	2
6. Reaches for object in container	None	1
7. Reaches for object in container	None	0
8. Reaches for object in container	None	0
9. Reaches for object in container	None	0
10. Reaches for object in container	None	0
11. Reaches for object in container	None	0

Administration Procedures

Order of Administration

- Recommended order of subtests is cognitive>>receptive>>gross>>fine>>expressive. This order is chosen to allow gross motor breaks and to have the most time to hear expressive communication. However, the order of subtests is flexible, and you may adapt the order according to the temperament/mood of the child.
- Efforts should be made to maintain consistency for order of subtests at subsequent visits.
- Irrespective of the order of administration, each subtest should be completed fully before moving on to the next subtest (i.e., there should be no bouncing around from one subtest to another).
 - You may credit incidental observations from one subtest to another. The cognitive and receptive communication subtests share six of the exact same items. Best practice is to complete a full subtest before moving to the next subtest. However, if there is an interruption during a subtest or it is unable to be completed in full, use your clinical judgment to determine whether the subtest should be continued after a break or a new subtest should be started before returning to the original subtest.
- You may choose to work in short breaks between subtests. If you take a break in middle of a subtest, you may want to work in a few items during the break.

Testing the Limits

- If you think a child can do a task with more time or additional support, they can be given the opportunity after standard administration is completed. Be sure to note whether they completed the task and what supports were needed for completion. Make sure to follow time limits when assigning scores.

Acceptable Accommodations

- Crediting eye gaze
 - As you prepare for the assessment, observe how the individual explores their surroundings with their eyes. Can they focus on one thing? Ask them to look at something you're holding—can they do so? Ask this question a couple times as you prepare to begin to see if they can make choices and indicate intentionality with eye gaze.
 - IF they can focus on an item, then you can give credit for **clear, RELIABLE** eye gaze if the child indicates object using their eyes rather than pointing. Reliable eye gaze is **sustained** and is in response to a request.
 - **Sustained eye gaze** can be determined if it is maintained for 1–3 seconds. It is not fleeting, and if the gaze clearly stops on the object it was intended for, it lasts there longer than 1 second.
- Elbow support
 - Provide arm/elbow support when child's fine motor coordination is severely affected (e.g., by ataxia, tremors). Elbow support can be provided at any time during testing, but be sure you are not directing the child's movement in any way.
- Use of nonslip pads
 - Consider using Dycem (or other nonslip materials or surfaces) for children with tremors.
 - Consider using painter's tape to secure the walking path to the floor for the gross motor portion to ensure safety.

- Substituting items
 - Try with standardized items first.
 - Use motivating items (e.g., food).
 - If substituting the standardized item, always record on this on the record form.
 - Book substitutions (for non-English speakers or for motivation)

Guidance from Pearson:

 - The book should be a children's picture book with colored pictures (not black and white pictures such as Mercer and Marianna Mayer's book "A Boy, A Dog, and A Frog").
 - ◆ Each page should have pictures.
 - ◆ Each page should have text with the picture, not just a picture on a page by itself.
 - ◆ Text can range from a word (e.g., labeling books) to a simple sentence (typical for picture books). Generally, do not exceed three sentences on a page.
 - ◆ The book should be approximately 5 inches (127 millimeters) by 7 inches (177.8 millimeters) so that children can easily hold it (think about the size of 2–3-year-old hands).
 - ◆ If possible, use board books because they are more durable, and little hands have an easier time of turning the thicker pages. Also, the thicker pages are less of a papercut hazard.

- Time limits
 - For items with time limits, score items according to time limits set in the manual. Allow the child to use the full amount of allotted time for completion of the item even if the child may not appear initially engaged. The examiners may also wish to allow extra time for children who are close to completing an item and simply record success and the completion time next to the item on the protocol (without awarding credit).
 - For items that have no time limit, be mindful that a longer response time (above 5–6 seconds) may be because the child needs longer to process OR it could be a clue that the child cannot complete the item. Monitor the child's persistence, frustration and fatigue to determine whether attention should be redirected to a different item.
- Use of Augmentative and Alternative Communication (AAC)
 - Ensure that the AAC device is accessible to the child *at all times*.
 - If a child uses an AAC and makes a response on a cognitive, receptive, and expressive item using the AAC, please make a note of it next to item on the protocol but do not credit them for these responses.
- Indicate whether the participant uses glasses, AFOs, braces, AAC, or other supportive tools AND whether they used them during the assessment.

Scoring Considerations

- Surpassed skills
 - Because individuals with AS do not develop skills in a linear fashion, some administered items may reflect a developmental skill that they have surpassed and no longer demonstrates because they have mastered a higher-level skill. For example, reflexes such as keeping hands fisted (for newborns) will have been resolved if the child can now use their hands functionally. Therefore, we would not expect them to keep their hands fisted and they should not be penalized with a score of zero on that item. The Bayley Administration Manual allows for giving credit for surpassed items if the child demonstrates higher-level skills. We have applied this logic to items throughout the test.

Scoring of zeros between ceiling and basal

- All items will still be scored with “0,” but the examiner should maintain documentation of whether the score of 0 is the result of a true attempt, refusal, or missed administration.
 - True attempt—administered and child makes attempt but cannot complete the task at a scorable level
 - Refusal—administered and child refuses to engage, turns away, throws items, etc.
 - Missed administration—error on part of examiner to administer the item

Repeat Administrations

- The Bayley-4 should not be administered more frequently than **every 3 months** to maintain validity and reduce the chances of practice and fatigue effects. Pearson recommends that children under 12 months of age can be tested every 3 months; those over 12 months should not be tested more frequently than every 6 months.
- Whenever possible, repeat administration should be conducted **by the same examiner** who conducted the baseline assessment.
- Examiner should be given the start points from the previous assessment but should not review previous items (include a sticky note with start points or a form for start points used that is referred to for later assessments; the electronic capture system used should capture start points).
- Repeat administrations should ideally be performed during the same time of day as the baseline assessment to avoid introducing bias and variability in change from baseline scores.