NCCVEH Preschool Vision Screening Guidelines:

10 Key Shifts from 2015 to 2025

What are the 10 Key Shifts in Preschool Vision Screening Guidelines from 2015 to 2025?

1. Annual screening
2. Referral criteria: 20/50 for 3yo, 20/40 for 4yo, and 20/32 for 5 years and older (change = 20/32 for 5 years and older instead of 6 years and older)
3. Observation of children for signs of possible vision disorders before conducting vision screening tests
4. Annual binocular, critical line near visual screening for preschoolers to assess functional vision, even when using instruments
5. Inclusion of critical line screening as an option for distance visual acuity screening
6. Addition of annual stereopsis screening with random dot stereograms, except when using instruments
7. No longer recommending specific instruments
8. Color vision screening only for children who are suspected of having color vision deficiency or having a family member with color vision deficiency
9. Rescreening untestable children within 2 weeks instead of 6 months, if able
10. Emphasis on developing a systematic process to help close the gap between referrals from vision screening and eye exams

What is the rationale for the changes?

The following provides the rationale for each updated vision screening recommendation for preschool-aged children:

1. **Annual Screening**
   - Moved from annual screening as best practice and at least once during preschool years as acceptable practice to annual screening for preschool-age children. The shift emphasizes annual screenings to ensure consistent monitoring and timely identification of potential vision problems, both critical to optimal visual development and academic success.

2. **Referral Criteria**
   - Changed 20/32 for ≥6 years to 20/32 for ≥5 years to reflect advancements in research, expert opinions, and clinical practices since the previous recommendations in 2015. The change aligns with 2016 joint guidelines (reaffirmed in 2022) from the American Academy of Pediatrics, the American Association of Certified Orthoptists, the American Association for Pediatric Ophthalmology and Strabismus, and the American Academy of Ophthalmology for consistency across national guidelines.
   - Children are referred for an eye exam if they cannot correctly identify 3 of 5 optotypes on the following distance chart lines when conducting monocular full threshold or critical line distance screening and binocular, critical line near screening:
     - 20/50 for 3-year-old children,
     - 20/40 for 4-year-old children, and
     - 20/32 for children ages 5 years and older

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3. **Observation**
   - Added a section on observing children for signs of possible vision disorders before conducting vision screening tests. Certain eye appearances, child behaviors, or child vision-related complaints noted by screeners, or reported by teachers and families, result in an automatic referral, even if the child passes vision screening tests. Because some children with vision disorders may still pass screening, careful observation supports early identification and helps ensure timely referral and evaluation.

4. **Binocular, Critical Line Near Functional Vision Screening**
   - Added as a required annual vision screening component, even when conducting instrument-based screening, to look at functional vision or how well a child sees for tasks requiring close focus, such as reading books, using handheld electronic devices, and performing early educational activities. Annual near functional vision screening helps identify children with moderate to high hyperopia, which may impact early literacy but may not affect distance vision or may be missed with instruments. This test helps to ensure that children with reduced near functional vision are not overlooked.

5. **Monocular Critical Line Distance Visual Acuity Screening**
   - The 2015 recommendations identified critical line screening as an acceptable, but not the best, practice. Critical line screening focuses on age-specific minimal acuity thresholds tailored to the child's developmental stage. The 2025 guidelines do not distinguish between acceptable and best practice, include critical line screening, and specify the following order of preference for distance visual acuity tests:
     - Single optotypes with crowding bars
     - Single line with crowding bars
     - Full eye chart

6. **Stereopsis Screening**
   - Moved from a supplemental screening to an annual screening, but not when doing instrument-based screening. Stereopsis screening helps detect problems in how a child's eyes work together, which can affect depth perception and key functional vision skills used for movement, learning, and everyday activities. In addition to binocular near visual acuity screening, stereopsis screening helps to ensure that children with reduced near visual function are not overlooked.

7. **Instrument-Based Screening**
   - No longer recommending specific instruments. We created technical assistance fact sheets on considerations for purchasing instruments, including questions to ask vendors; differences between optotype- and instrument-based screening; and what instruments can and cannot do.

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8. **Color Vision Deficiency Screening**
   - Added a section on color vision deficiency screening. This recommendation is not part of routine annual screening tests. The recommendation is to conduct color vision screening when preschoolers are suspected of having color vision deficiencies or when a family member has a known color vision deficiency. Children with a color vision deficiency should receive educational support and guidance on vocational choices as they progress through school.

9. **Rescreening Untestable Children in 2 Weeks Instead of 6 Months**
   - Untestable children are at least twice as likely to have vision disorders compared to those who pass vision screenings.* Rescreening untestable children on the same day, if possible, and no later than 2 weeks after the initial screening, minimizes delays in identifying and addressing vision problems. The previous 6-month window was deemed too long for children requiring a referral for an eye examination. If rescreening an untestable child cannot occur within 2 weeks, refer the child for an eye exam.

     *Maguire, M. G., & Vision in Preschoolers Study Group. (2007). Children unable to perform screening tests in the Vision in Preschoolers Study: Proportion with ocular conditions and impact on measures of test accuracy. *Investigative Ophthalmology & Visual Science, 48*(1), 83–87. https://doi.org/10.1167/iovs.06-0387

10. **Developing a Systematic Process to Close the Gap Between Referrals from Vision Screening and Eye Exams**
    - Vision screening alone cannot reduce vision disorders unless children referred for further evaluation receive comprehensive eye examinations and treatment, if necessary. Added a separate section on reducing the gap between referrals from vision screening and the number of children receiving eye examinations and treatment by creating a systematic referral follow-up process. This includes addressing family barriers to completing eye examinations, maintaining a data collection system to track referrals and examination results, and sharing eye exam results with children's primary care providers. This approach helps to ensure timely treatment and better visual and developmental outcomes for children.

These updated recommendations aim to enhance the accuracy, efficiency, and equity of vision screening programs and to strengthen systems that support timely identification, appropriate referral, and follow-up for preschool-age children, contributing to improved visual and developmental outcomes.

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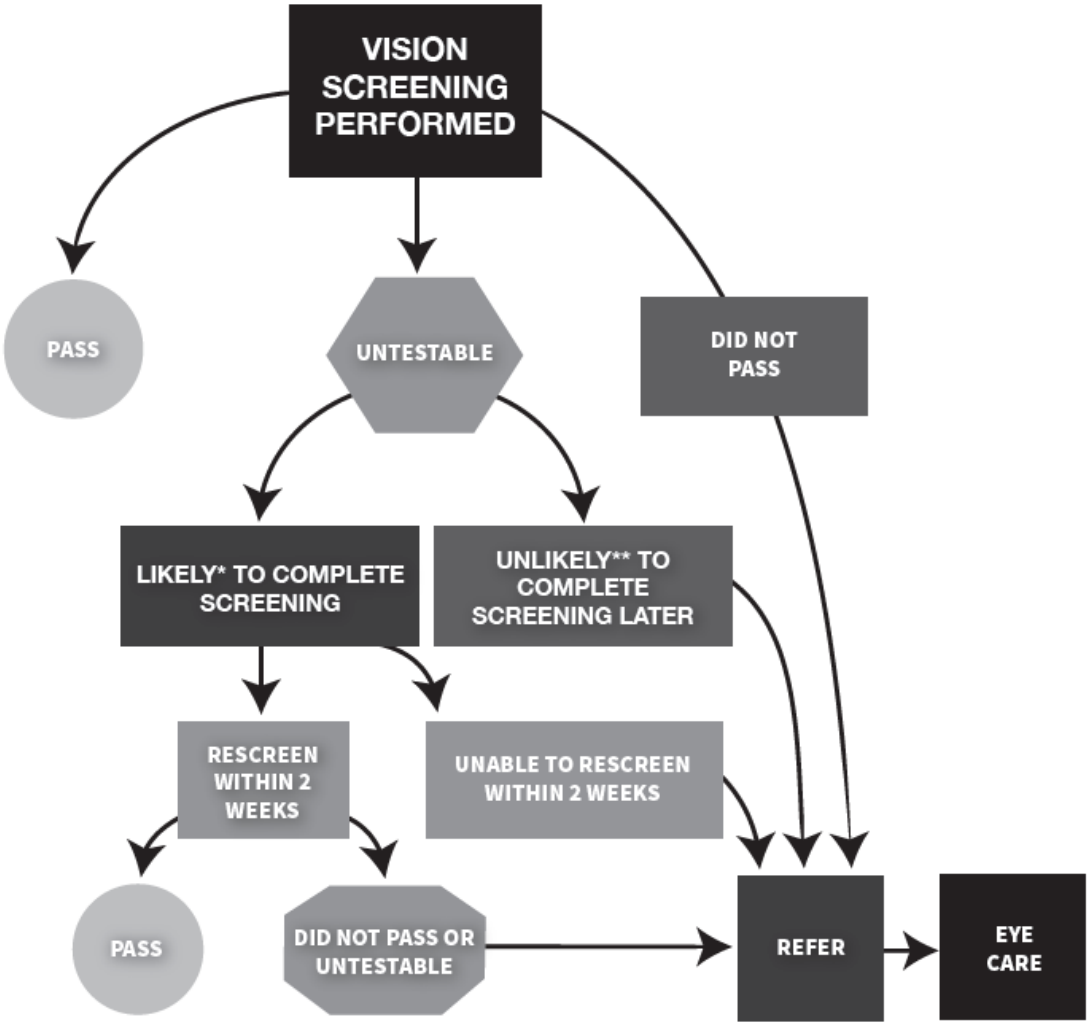
Rescreen or Refer Flowchart:



* "Likely" includes children who are inattentive, uncooperative, or do not understand the task.

** "Unlikely" includes children with cognitive, physical, or behavioral issues that preclude rescreening, and those unable to be rescreened in a timely manner because of administrative or other issues. These children should be referred directly for a comprehensive eye examination.

For Additional Details on the Rationale Behind the Updates and to Download the Open Access Paper:

- Pang Y, Lyons SA, Nottingham Chaplin PK, Block SS, Fishman D, Ciner EB; on behalf of the Advisory Committee to the National Center for Children's Vision and Eye Health at Prevent Blindness. Recommended practices for vision screening in pre-school-age children: A 2025 update. *Optom Vis Sci.* 2025;102(10):589-595. doi:10.1097/OPX.0000000000002290
  https://journals.lww.com/optvissci/fulltext/2025/10000/recommended_practices_for_vision_screening_in.2.aspx

Frequently Asked Questions (FAQs)

This FAQs section is a living document and will be updated as additional FAQs and clarifications are added. The date and version information are at the end of this document.

FAQs

QUESTION 1: Now that critical line screening is acceptable, must I do critical line screening?

ANSWER: No. Either critical-line flipbooks or full-threshold charts are acceptable. You can also do critical-line screening with a full-threshold chart.

FAQs

QUESTION 2: If a child does not pass a vision screening test, do I need to finish using all the tests?

ANSWER: No. As soon as a child does not pass one vision screening test, stop and make a referral. Inform parents/guardians/caregivers what the child did not pass and provide information about the next steps: Parents/guardians/caregivers arrange and attend an eye examination and follow up on treatment recommendations, such as patching or buying prescription eyeglasses.

FAQs

QUESTION 3: If I use a critical-line chart, which doesn't provide the 2-line difference that a full-threshold chart does, will stereopsis screening take the place of the 2-line difference?

ANSWER: No, stereopsis screening will not necessarily detect what a two-line interocular difference on a visual acuity chart would reveal. Stereopsis and optotype-based screening measure different aspects of visual function.

What Each Screening Method Detects

1. **Optotype-based full-threshold visual acuity screening:**
   - Tests each eye monocularly.
   - Detects reduced acuity in one eye compared with the other (often ≥ 2-line difference).
   - Detects potential amblyopia or refractive errors (anisometropia, astigmatism, high hyperopia) that reduce clarity in one eye.
2. **Stereopsis screening:**
   - Tests depth perception, which is a function of using the two eyes together.
   - Requires the brain to combine images from both eyes into a single 3-D image.
   - Detects potential eye misalignment (strabismus).
   - Child will likely not pass stereopsis screening if the input from one eye is suppressed, misaligned (strabismus), or markedly blurred.

Interpretation:

- The stereopsis tool checks how well both eyes work together (binocular fusion).
- A 2-line difference between the eyes (intraocular) on a chart indicates decreased monocular acuity, which is often the earliest or only sign of anisometropic amblyopia, which stereopsis screening may miss if fusion is still partly intact.
- Therefore, both tests are recommended because they target different risk factors for amblyopia and other binocular vision problems.

Bottom Line

- A 2-line interocular difference on monocular acuity screening detects unequal vision between eyes.
- Stereopsis screening detects ineffective binocular vision (poor fusion or suppression) and possible eye misalignment (strabismus).
- Each identifies some of the same children at risk for amblyopia, but neither substitutes for the other.

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FAQs

QUESTION 4: In what order are recommended optotype-based screening charts ranked?

ANSWER: The recommended optotype-based screening charts for distance visual acuity screening in preschool children are ranked in the following order of preference:

1. **Single optotypes with crowding bars**
2. **A single line of optotypes with crowding bars**
3. **A full eye chart**

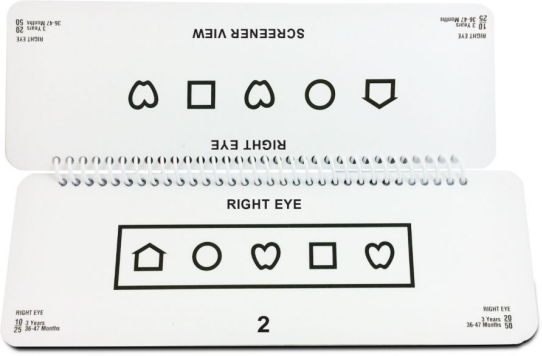
This ranking is based on established guidelines and empirical evidence, with single optotypes and crowding bars being the most effective for detecting vision issues in young children.

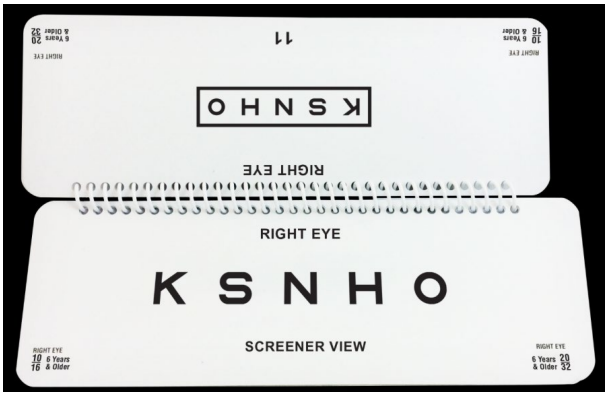
Recommended optotypes are LEA SYMBOLS® and HOTV letters.

Examples:

Single optotypes with crowding bars: (e.g., EyE Check and Vision In Preschoolers Kit)

A single line of optotypes with crowding bars (e.g., Sight Line with LEA SYMBOLS® and Sloan letters)





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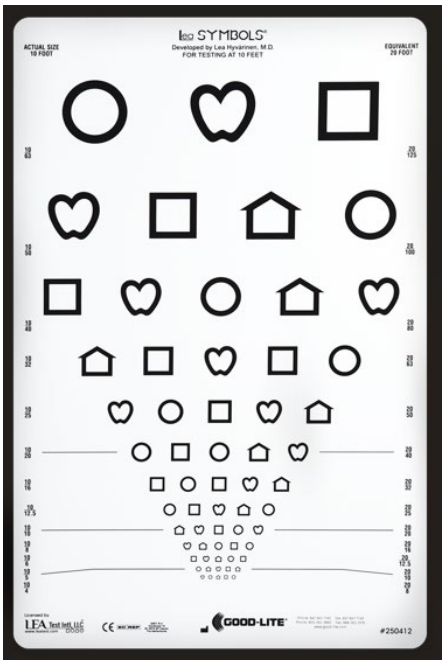
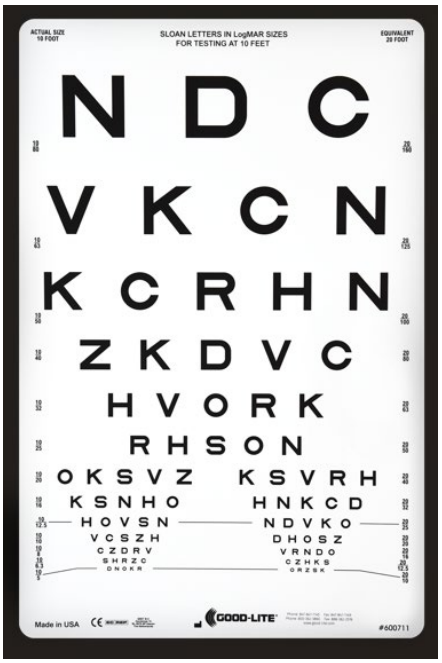
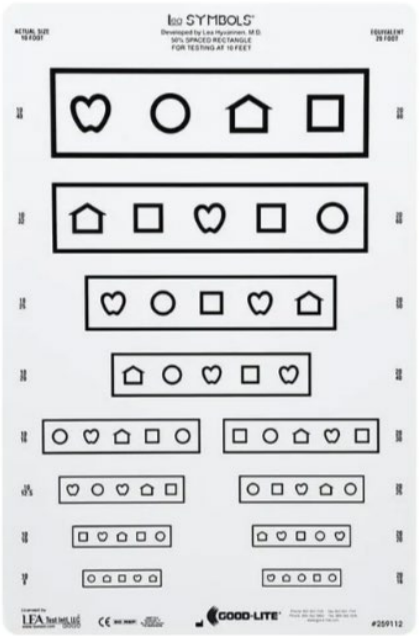
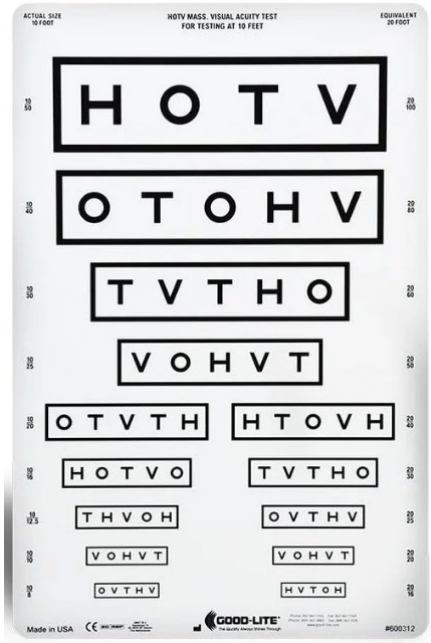
A full eye chart (e.g., LEA SYMBOLS®, HOTV, and Sloan letters)





A full eye chart (e.g., LEA SYMBOLS® and HOTV)





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FAQs

QUESTION 5: If stereopsis screening was optional in the 2015 recommendations, why is stereopsis screening recommended as a component of annual screening in the 2025 paper?

ANSWER: The 2025 recommendation to include stereopsis screening as part of the core annual screening components was based on clinical/expert opinion. Specifically, the authors state:

1. **Association with Hyperopia**: The authors mention that stereopsis declines with increasing hyperopia, and stereopsis screening may identify children with moderate and high hyperopia who could be missed using instrument-based or visual acuity screening.
2. **High Testability and Predictive Value**: The Pediatric Assessment of Stereopsis with a Smile (PASS) Test 2, a random dot stereogram test, has a testability rate of over 99% in children aged 3 to 5 years. Furthermore, children unable to complete the PASS Test 2 were 5.75 times more likely to have a vision disorder compared to children who were testable.*

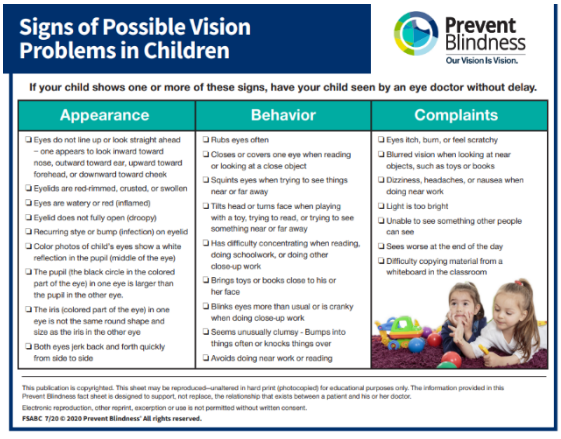
*Ciner, E. B., Ying, G. S., Kulp, M. T., Maguire, M. G., Quinn, G. E., Orel-Bixler, D., Cyert, L. A., Moore, B., Huang, J., & Vision in Preschoolers Study Group (2014). Stereoacuity of preschool children with and without vision disorders. *Optometry and Vision Science, 91*(3), 351–358. https://doi.org/10.1097/OPX.0000000000000165

These points collectively represent clinical/expert opinion supporting the inclusion of stereopsis screening as a core component of annual vision screenings for preschool-age children.

FAQs

QUESTION 6: When I begin screening with observation and notice something in Appearance or Behaviors, or when the child's teacher or parent reports a Behavior or Complaint, should I stop and refer, or continue using screening tools?

ANSWER: Anything noted on the Signs of Possible Vision Problems is an automatic referral, and you DO NOT need to use other screening tests.



Signs of Possible Vision Problems in Children

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If your child shows one or more of these signs, have your child seen by an eye doctor without delay.

Appearance	Behavior	Complaints
❑ Eyes do not line up or look straight ahead – one appears to look inward toward nose, outward toward ear, upward toward forehead, or downward toward cheek ❑ Eyelids are red-rimmed, crusted, or swollen ❑ Eyes are watery or red (inflamed) ❑ Eyelid does not fully open (droopy) ❑ Recurring stye or bump (infection) on eyelid ❑ Color photos of child's eyes show a white reflection in the pupil (middle of the eye) ❑ The pupil (the black circle in the colored part of the eye) in one eye is larger than the pupil in the other eye. ❑ The iris (colored part of the eye) in one eye is not the same round shape and size as the iris in the other eye ❑ Both eyes jerk back and forth quickly from side to side	❑ Rubs eyes often ❑ Closes or covers one eye when reading or looking at a close object ❑ Squints eyes when trying to see things near or far away ❑ Tilts head or turns face when playing with a toy, trying to read, or trying to see something near or far away ❑ Has difficulty concentrating when reading, doing schoolwork, or doing other close-up work ❑ Brings toys or books close to his or her face ❑ Blinks eyes more than usual or is cranky when doing close-up work ❑ Seems unusually clumsy - Bumps into things often or knocks things over ❑ Avoids doing near work or reading	❑ Eyes itch, burn, or feel scratchy ❑ Blurred vision when looking at near objects, such as toys or books ❑ Dizziness, headaches, or nausea when doing near work ❑ Light is too bright ❑ Unable to see something other people can see ❑ Sees worse at the end of the day ❑ Difficulty copying material from a whiteboard in the classroom

FAQs

QUESTION 7: Why is binocular, critical line near functional vision now part of the core annual vision screening components?

ANSWER: The benefit of adding near functional vision screening for preschool-age children is the ability to detect vision issues that may not be identified through distance visual acuity or instrument-based screenings. Specifically:

1. **Detection of Hyperopia**: Moderate to high hyperopia (farsightedness) in preschool-aged children is not always associated with reduced distance visual acuity and may be missed by other screening methods. Binocular, critical line near functional visual screening may identify children with hyperopia who may struggle with tasks requiring close focus, such as reading or other early educational activities. Binocular, critical line near vision screening was added to determine a child's functional vision, or how well a child can see for tasks requiring close focus.

2. **Improved Early Literacy Skills**: Findings in a Vision in Preschoolers-Hyperopia in Preschoolers (VIP-HIP) study suggest that uncorrected hyperopia of ≥+4.00 D is associated with reduced early literacy performance in preschool-aged children, especially in children with reduced near visual function.* Detecting hyperopia early through near functional vision screening may lead to timely intervention, improving academic outcomes.

   *Kulp, M. T., Ciner, E. B., Maguire, M., Moore, B., Pentimonti, J., Pistilli, M., Ying, G. S., Cyert, L., & VIP Study Group. (2016). Uncorrected hyperopia and preschool early literacy: Results of the Vision in Preschoolers–Hyperopia in Preschoolers (VIP-HIP) study. *Ophthalmology*, 123(4), 681–689. https://doi.org/10.1016/j.ophtha.2015.11.023

3. **Enhanced Detection of Amblyopia**: Reduced binocular near visual acuity may indicate bilateral amblyopia, which is age-sensitive and benefits from early treatment for optimal outcomes.

4. **Comprehensive Vision Assessment**: Reduced binocular near visual acuity may indicate bilateral amblyopia, which is age-sensitive and benefits from early treatment for optimal outcomes.

In summary, adding binocular, critical line near functional vision screening helps identify vision problems that affect close-up tasks, allowing children to receive timely care that may support learning and development. These points collectively represent clinical/expert opinion supporting the inclusion of binocular, critical line near functional vision screening as a core component of annual vision screenings for preschool-age children.

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