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Screening Visual Control in Young Children:

Using Assessment Data to Plan Intervention within the Context of Home Environments

Poster presentation at the American Academy for Cerebral Palsy & Developmental Medicine Annual Meeting: Toronto, Canada, September 2000

Abstract

This poster presentation is intended for professionals in any discipline who need a quick but comprehensive screening instrument for young children with delayed or atypical visual-motor development due to developmental disabilities. It describes a new screening form derived from a qualitative developmental vision assessment in use for almost ten years throughout the United States and overseas, illustrates selected test items with video-captured still photographs, and gives examples of how to use the data-based results to plan home intervention programs.

Construction of the Developmental Vision Assessment (long form) began with an extensive literature review from the fields of medicine, education, child development, and developmental psychology. The process of collecting, comparing, compiling, and organizing the developmental normative data was followed by wide clinical use and several revisions based on a videotaped study of normal infants from birth to 6 months and field study data. An interrater reliability study showed highly significant interrater agreement with the test author.

The short screening form was derived from all items designated as norms, that is, permanent patterns which emerge at any time during the first 6 months, and remain throughout life, as opposed to transitional patterns replaced by those more mature. This short form is organized into two sections: 1) primarily involuntary visual patterns (reflexive), and 2) primarily voluntary eye movements (primarily cognitively-directed). If test items from any cluster are scored absent or inconsistent, then that entire cluster needs to be scored with the long form. Thus, when used to identify gaps in developmental sequences in children with delayed or atypical visual patterns, test results may be used to explain specific functional problems, serve as a guide for treatment, and provide rationale for adapted equipment and materials.

CASE REPORT: AGE 3



Marjie, a 3 1/2-year-old female, was referred to occupational therapy for an evaluation of the motor components of the visual system, in order to integrate visual intervention procedures into home routines, school settings, and therapy sessions.

Medical diagnoses:

- periventricular leukomalacia

- microcephaly
 - hypotonia
 - reflux
 - failure to thrive
 - recurrent otitis and sinusitis
 - global developmental delays
- (age equivalencies of approximately 18 months)

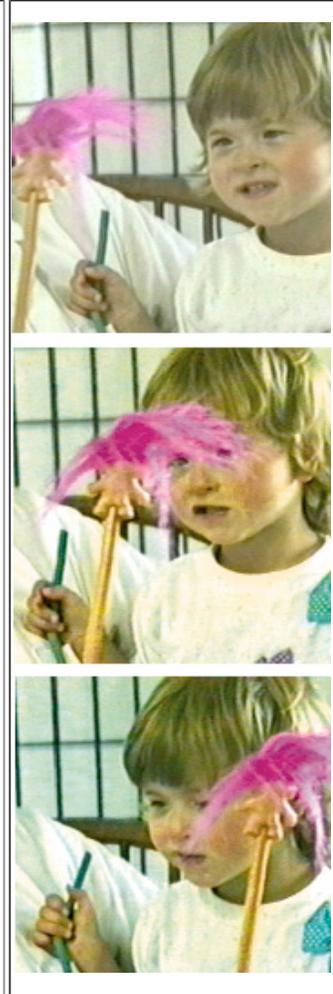
Functional problems (reported by parents, teachers, and therapists):

- distraction by environmental stimuli
- difficulty staying on task, especially in group activities
- inconsistent eye-hand coordination (eyes watching hand)
- delayed visual-perceptual skills (drawing)

Ophthalmological history and current examination:

- strabismus surgery (resection) on both eyes at 11 months
- intermittent alternating esotropia
- hyperopia (farsightedness) needing correction:
 OD (right eye): +5.50 sphere, +2.50 cylinder at axis 90
 OS (left eye): +4.00 sphere, +3.00 cylinder at axis 90
- resistance to corrective lenses

ASSESSMENT DATA

| | | |
|---|--|--|
| <p>Localization: Reaches and grasps cracker without looking</p> | <p>Fixation: Inconsistent attention to book, easily distracted</p> | <p>Ocular Pursuit: Loses target at midline</p> |
|  |  |  |

EXAMPLES OF THE HOME INTERVENTION PROGRAM

| Visual Components | Localization | Fixation | Ocular Pursuits |
|-------------------------|--|---|---|
| Functional Problems and | Feeding (self-help, fine motor): inconsistent eye-hand | Dressing (self-help, gross and fine motor): | Play (cognitive, social, fine motor, oculomotor): eyes/head |

| | | | |
|------------------------------------|--|---|--|
| Problems and Domain Areas | coordination, immature grasps, feels rather than looks | difficulty staying on task, easily distracted | move together irregularly while drawing |
| Positioning and Adaptations | Sitting: finger food presented in various areas of the table surface, requiring visual search; food pellets in tiny muffin tins (space for only 2 or 3 fingers) | Sidelying: stable position for pulling on/removing socks (eye/hand/foot coordination and bilateral use of hands) | Supine: stable position of head and body for eyes to move separately from head during flashlight games on ceiling in dark room at bedtime |
| Developmental Interventions | Size of finger foods gradually reduced; grasps taught in developmental sequence for success toward learning pincer grasp | Sock partly on/off (backward chaining) to increase motivation and attention span | Flashlight tag to improve tracking, following developmental sequence: horizontal, vertical, diagonal |

RESULTS: AGE 7



Marjie, now 7 1/2 years old, receives special education and related services, and is partially mainstreamed into regular education classes. Her global developmental delays equal age equivalencies of approximately 4 years.

Current functional status:

- still distracted by environmental stimuli, needs a quiet place without interruption to perform academic work, benefits by repetition
- stays on task better if a reward system is used
- improved eye-hand coordination, resulting in more mature fine motor manipulation skills
- drawing and writing improved but still delayed

New skills acquired:

- mature pincer grasp of food pellet; eyes watch hand
- operates telephone push buttons with poking index finger or thumb, other fingers partially flexed (previously used middle finger for stability)
- socks on and off with minimal assistance; dresses doll independently
- sight-reads 6 words, smoother eye movement, increased attention span
- uses mature dynamic tripod pencil grasp to draw and print letters, stabilizes paper with other hand

Current ophthalmological status:

- requests glasses daily and wears them consistently
- increased hyperopia (farsightedness) needing correction:
 OD (right eye): +7.00 sphere, +1.50 cylinder at axis 120
 OS (left eye): +6.25 sphere, +2.25 cylinder at axis 85
- strabismus surgery to be repeated at age 8

| | | |
|--|--|--|
| Localization: finds small targets and isolates fingers for pincer grasp of raisins and telephone push buttons | Fixation: attends longer without distraction for identification of pictures and dressing skills | Ocular Pursuit: smoother eye movements for reading and writing, and more consistent visual monitoring of object in hand |
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