

Visual attention in the first half year of life and functional outcome at school age

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Primary objectives:- to determine whether early visual attention is associated with visual attention and perception at school age- to determine whether early visual attention is associated with motor performance, visual-motor skills, intelligence...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Observational non invasive

Summary

ID

NL-OMON36062

Source

ToetsingOnline

Brief title

Early visual attention and functional outcome

Condition

- Other condition

Synonym

premature labor, Prematurity

Health condition

prematuriteit

Research involving

Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen

Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Follow-up, Functional outcome, Visual attention

Outcome measures

Primary outcome

Early visual attention was expressed in:

- duration of holding attention (fixation of gaze);
- the time it takes to shift attention from a central stimulus to a peripheral stimulus and visa versa.

The main endpoints of this study are derived from:

- validated neuropsychological tests and parental questionnaires, to be expressed in percentiles and z-scores;
- experimental tasks, to be expressed in average response times and number of correct answers. Because of lacking of standardized data, experimental test results of term born children will be compared with that of preterm children.

Secondary outcome

Not applicable.

Study description

Background summary

Over the past decades there has been growing interest in the prediction of

outcome from early infancy to performance at school age, particularly in infants at high risk of developmental deficits. It has been increasingly recognized that around 50 percent of the infants born preterm develop neurological problems later on, which comprise not only mild motor problems (minor neurological dysfunction, "MND") but also specific cognitive deficits and behavioural problems. One of the fundamental components for motor, cognitive and behavioral development is visual attention.

Research on development of visual attention showed that, at the age of 6 weeks, preterm infants had more gazing behaviour than infants born at term. However, preterm infants shifted their gaze more quickly to a peripheral stimulus than infants born at term. Although there is no clear evidence of a potentially beneficial or harmful effect of early visual experience, preterm infants showed a temporary abnormal development of disengagement until the age of 26 weeks. How the early development of visual attention (in the first 6 months) is associated with several domains of functional development at school age, and whether this association is different between preterm and term born infants, is unknown.

Study objective

Primary objectives:

- to determine whether early visual attention is associated with visual attention and perception at school age
- to determine whether early visual attention is associated with motor performance, visual-motor skills, intelligence and behavioural problems at school age

Secondary objective:

- to determine whether the association between early visual attention and functional outcome differ between infants born preterm and at term

Study design

Children will be invited for follow-up at the age of 9-11 years. Follow-up consists of the following tests:

Motor performance:

To assess the children's motor outcome we will administer the Movement ABC, a standardized test of motor skills for children. This test yields a score for total movement performance based on separate scores for manual dexterity (fine motor skills), ball skills, and static and dynamic balance (coordination). The tasks composing the Movement ABC are representative of the motor skills that are required of children attending elementary school and are adapted to the child's age.

Test administration time: 20-30 minutes.

Coordination:

Subtests of Touwen's neurological examination will be performed to evaluate the child's neurological condition. This is a standardized and age-appropriate neurological examination. The two components that will be tested are 1) graphesthesia using tactile perception (tactile recognition of a figure in palm) and 2) proprioception using the finger-nose test and the Romberg test. Test administration time: 10 minutes.

Writing skills:

The motor aspect of writing will be assessed by using *De Beknopte Handschrifttest voor Kinderen* (BHK). Test administration time: 7 minutes.

Intelligence:

Total, verbal and performal intelligence will be assessed using a short form of the Wechsler Intelligence Scale for Children, third version (WISC-III). We will use two verbal subscales (Similarities, Vocabulary) and two Performance subscales (Picture Arrangement, Block Design). Verbal (VIQ), Performance (PIQ) and Total (TIQ) intelligence quotient scores will be calculated. Test administration time: 30 minutes.

Visual attention:

We will measure selective attention and attentional control with the two subtests *Map mission* and Opposite worlds* of the Test of Every day Attention for Children (TEA-Ch). Selective attention refers to a child's ability to select target information from an array of distracters; attentional control refers to the ability to change attentional focus flexibly and adaptively. Test administration time: 10 minutes.

Visual perception:

We will measure visual perception with the three subtests *Form Constancy*, *Visual Closure* and *Form Discrimination* of the Test for Visual-Perceptual Skills- third Edition (TVPS-3)(15).

Test administration time is about 15 minutes.

In addition to the TVPS-3, we will let the children perform five experimental computer tasks, adapted for children and based on research by Chen et al. (protocol pag 15) and previously used in the PINKELTJE study (Preterm Infants Knowledge on Target Height and Outcome). This study was approved by the IRB / IEC (see METC 2005/130 dated 08.07.2008). The tasks measure speed and accuracy of visual perception mediated by ventral and dorsal visual processing in the brain.

Test administration time: 20 minutes.

Visual-spatial information processing:

Visual-spatial information processing will be assessed using three subtests of the NEPSY-2-NL, a neuropsychological battery for children. The three selected subtests, Geometric Puzzles, Arrows and Route Finding measure concentration,

memory and visuospatial information processing / visual perception.

Test administration time: 30 minutes.

Visuomotor integration:

Visuomotor integration will be assessed by the subtest *Design copying* of the NEPSY-2-NL, in which the child is asked to reproduce geometric forms of increasing complexity. Visuomotor integration involves the integration of visual information with finger-hand movements.

Test administration time: 10 minutes.

Vision:

Clinical assessment of vision by Donders* method and testing of stereoscopic vision.

Test administration time: 10 minutes.

The total duration of the follow-up will be approximately 3 to 3,5 hours, including breaks.

The parents will be asked to complete the following questionnaires:

Behaviour:

In order to obtain information on children*s competencies and behavioural/emotional problems the parents are supposed to complete the Child Behaviour Checklist (CBCL/6-18, Child Behaviour Checklist for Ages 6-18). The CBCL is a questionnaire in which parents, other relatives or teachers answer questions about skills and behaviour of a child. These include daily and school activities, attention functioning, social and emotional behaviour. Parents can indicate how frequently the child has shown a particular behaviour in the past 6 months.

Duration: 15-20 minutes

Executive functioning:

Information on executive functioning can be obtained by the Behaviour Rating Inventory of Executive Function (BRIEF). The BRIEF assesses executive functioning involved in well-organized, purposeful, goal-directed, and problem-solving behaviour. Executive functions are important when performing a new or difficult task that requires constant attention and effort. Examples of executive functioning are the ability to inhibit competing actions of attractive stimuli, the flexibility to shift problem-solving strategies if necessary, and the ability to monitor and evaluate one*s behaviour.

Duration: 10 - 15 minutes.

Attention:

Parents will be asked to fill out an Attention Deficit/Hyperactivity Disorder (ADHD) questionnaire that contains 18 items on inattention, hyperactivity, and impulsivity.

Duration: 10 - 15 minutes

Coordination:

To screen for motor problems in daily life the Developmental Coordination Disorder Questionnaire- Dutch version (DCDQ-NL) will be handed out. This questionnaire contains 17 items about motor coordination in daily life. Parents should indicate to what extent the coordination of their child matches that of other children of similar age.

Duration: 10 - 15 minutes.

Study burden and risks

Overall, testing will take 3 to 3.5 hours, in one session in the morning or afternoon. In between tests breaks will be held to prevent the child experiencing physical and physiological discomfort, and to ensure that the child is able to complete the full set of tests.

Most infants like to participate since all tests include elements of play.

To parents and their child will be emphasized that they could stop or pause the testing procedure at any time for any reason, if they wish to do so without any consequences. If possible, test administration will be continued another time.

When parents decide to withdraw consent during the testing procedure, test administration will of course not be resumed. Data obtained before withdrawal will be removed from the database and no longer used for this study.

Data from this study can not be obtained in another population, as the intention of this study is to investigate the association between early development of visual attention and functional outcome at school age. The children of whose visual attention is previously investigated are now considered to be 9-11 years old. The neuropsychological tests (mentioned in methods) are standardized and designed for children in this specific age group, and its results (standard scores) give an adequate representation of functioning at school age.

The results from this study increase our knowledge about the predictive value of early visual attention for functioning at school age. This may, as a consequence, lead to accurate monitoring of children who present with visual attention problems in their first half year of life.

In addition, this study provides us information about the longitudinal development of visual attention and whether these developmental trajectories differ between children born preterm and children born at term.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Children (2-11 years)

Inclusion criteria

Children (term born n=23; preterm n=10) who were previously investigated on their development of visual attention in 2000-2002. We refer to the research protocol of S. Hunnius for the original inclusion criteria.

Exclusion criteria

Children are excluded when they are not traceable (lost to follow-up), or when the parents and/or their child refuse participation.

Study design

Design

Study type: Observational non invasive

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Basic science

Recruitment

NL
Recruitment status: Recruitment stopped
Start date (anticipated): 20-10-2011
Enrollment: 33
Type: Actual

Ethics review

Approved WMO
Date: 05-09-2011
Application type: First submission
Review commission: METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL36981.042.11