Crowding in children with visual impairment: The effect of a magnifier on near visual acuity

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Ethical review	Approved WMO
Status	Recruiting
Health condition type	Vision disorders
Study type	Interventional

Summary

ID

NL-OMON35171

Source
ToetsingOnline

Brief title
Crowding

Condition

- Vision disorders

Synonym
visual impairment

Research involving
Human

Sponsors and support

Primary sponsor: Bartimeus
Source(s) of monetary or material Support: ZonMw

Intervention

Keyword: crowding, fine motor skills, magnifier, near visual acuity, visual aid, visual impaired children

Outcome measures

Primary outcome

The dependent variable is the performance on the crowding task before and after the magnifier training. Also will be looked at the qualitative and qwantitative performance on the magnifier task itself (number of errors that are made and speed). Performance on fine motor skills and eye movement experiments will be investigated.

Secondary outcome

Work posture and viewing behavior.

Study description

Background summary

Crowding is a phenomenon in which symbols are less accurately identified in the proximity of other symbols. This phenomenon is present in everyone at some point, but normally disappears between the age of five to seven and is then no longer disturbing. Children with a visual impairment experience more crowding than normally sighted children. Research has shown that an impressive number of adults with a visual impairment still experience disturbing amounts of crowding. Crowding has a big influence on reading and learning to read. Children with a visual impairment have more problems with reading and learning to read than normally sighted children. They show poorer reading speed, which indicates that the process of decoding the letter symbols takes more time. The visual system is more capable of identifying symbols when they are larger and the space between symbols is larger. A magnifier also reduces the amount of symbols in the field of view. The combination of these two factors suggests that a child who experiences difficulties in identifying closely-spaced symbols because of crowding will benifit from the use of a magnifier. The development of fine motor skills and eye movements are essential for magnifier use.
The recent study proposal is focussed on exploring the effects of the use of a

magnifier on mechanisms that underlie learning to read, viewing behaviour and stimulating near visual acuity. Fine motor skills and eye movements which are required for magnifier use will also be assessed.

Study objective

This study has two major goals. The first goal of this study is to evaluate whether the disabilitating effects of crowding can be reduced by the use of a magnifier early in life. The second goal is to investigate motor and visual development of visually impaired children in order to apply low vision aids more successfully.

Study design

Children will be assessed in terms of fine motor skill development, mental developmental level and ophthalmologic research (acuity, near visual acuity, visual field). These are the prime measures of the project. Within the crowding project, two research moments will take place.
In september and october 2010 Part 1 and Part 2 of the study will be performed. Part 1 consists of measuring the amount of crowding with a crowding test without using a magnifier. In Part 2 the same test will be administrated, but this time a magnifier is used. Additionaly, fine motor skills and eye movements will be assessed through experiments. These measures are premeasures. In november and december 2010, a part of he group will follow a magnifier training. Half of the youngest, visually impaired group will practice the task with a magnifier and the other half will practice the task without a magnifier. In january and february postmeasures will be taken (crowding test with and without magnifier use and the experiments that measure fine motor skills and eye movements).
In september and october 2011 a new dynamic crowding task will be developed. Also pilots will be used to test the adequacy of the new instrument. In september and october 2012, this training will be performed and task performance will be measured before and after the new training. Only the young, visually impaired group follows this intervention. Finally, experiments will measure integration of action and perception.

Intervention

In november and december 2010 the young, visually impaired children will receive an intervention. This interventions will take course over 6 weeks. Children will be visited at home by a trainer. During 6 weeks, 12 half hour sessions will be take place.
The dynamic crowding training will be constructed in 2011.

Study burden and risks

The burden includes an ophthalmologic, fine motor and developmental assessment. These are standard procedures for a child's first visit to Bartimeus. Additionally, fine motor skills and eye movements are measured. The burden for the participant is reasonable. The young children with a visual impairment will be trained with a evidence-based intervention. Stimulating fine motor skills and reducing crowding are the fundamental goals of this study.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Children (2-11 years)

Inclusion criteria

-age 3.5 to 8 years;
-normative developmental level;
-intact peripheral visual field;
-no earlier experience with visual aids;

-birth at term.

Exclusion criteria

-small visual field (retinal dystrophy);
-multiple handicaps;

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	20-05-2010
Enrollment:	240
Type:	Actual

Medical products/devices used

Generic name:	magnifier
Registration:	Yes - CE intended use

Ethics review

Approved WMO

Date:	27-04-2010
Application type:	First submission

Review commission: CMO regio Arnhem-Nijmegen (Nijmegen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

ID: 20067
Source: Nationaal Trial Register
Title:

In other registers

Register	ID
CCMO	NL26835.091.10
OMON	NL-OMON20067
OMON	NL-OMON27147