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The effect of wearing yellow or blue filters on reading and spelling ability

Submission date
16/12/2014

Recruitment status
No longer recruiting

Registration date
08/05/2015

Overall study status
Completed

Last Edited
12/06/2020

Condition category
Other

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Up to half of all children with reading problems find it difficult to see text clearly. Letters appear to blur, glare, go double or move around, and these problems can give them headaches. Previous research has shown that these problems may be due to the poor readers having reduced sensitivity to time varying low–level visual stimuli, for example, moving dots. This sensitivity is important for making visual targets appear stationary despite eye movements and it is controlled by a system of large specialised (magnocellular) neurones in the brain. The development of these neurones have been found to be impaired in many children with reading problems. There are good physiological reasons for supposing that viewing text through either simple blue or yellow coloured filters may improve magnocellular function. We have found that indeed this is so, and that the use of these filters is often followed by rapid reading and spelling progress. However, these claims have been disputed. There is no agreement about whether coloured filters can really help more than a placebo. Here, we will test if simple and cheap blue or yellow filters can really help children with reading difficulties. If so, this low cost technique should be used wherever appropriate, in order to help the 10–20% of primary school children who have great difficulties learning to read.

Who can participate?
Children experiencing reading difficulties

What does the study involve?
The carers of all potential participants attending Dyslexia Research Trust (DRT) clinics are asked to allow their child to take part in the research. The only difference from the routine assessments carried out in the clinics is that each child is treated with blue, grey and then yellow filters in a random order. Upon arrival at the DRT, we discuss the study with them, ensure that both the child and carer understand why we are doing the study, what we hope to find, what will be expected of them and ask them to sign a consent form. Psychometric assessments (pen and paper tests) are carried out along with a visual assessment, clinical tests of vision and recordings of the movement of eyes. Following completion of these tests each child is given an envelope containing either yellow, grey or blue filters. This envelope is not to be opened until they leave the clinic to ensure that the researchers do not know which colour the child received. At a second appointment after 3 months, the filters will be swapped to another colour. The

researchers will be blind to the colour the child receives at any of the follow ups. To assess the effects of the yellow, grey and blue lenses the children are further assessed at 3, 6 and 9 months when all the psychometric and visual assessments are retested. We ask the participants not to disclose the colour of the filter they have received to the researchers . Only at the end of the fourth and final assessment are researchers told treatment order, once the participant has finished the study.

What are the possible benefits and risks of participating?
None of the colours are likely to harm the children in any way and the reading of the majority of them is likely to be helped by one or another colour.

Where is the study run from?
The Dyslexia Research Trust clinic (Reading)

When is the study starting and how long is it expected to run for?
October 2014 to October 2022

Who is funding the study?
Dyslexia Research Trust (UK)

Who is the main contact?
Professor John Stein
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Contact information

Type(s)
Scientific

Contact name
Dr John Stein

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
REWBYF 1.3

Study information

Scientific Title
The effect of wearing yellow or blue filters on reading and spelling ability: a randomised controlled trial

Acronym
REading With Blue or Yellow Filters (REWBYF)

Study objectives
Can wearing yellow or blue filters help some children to learn to read

Ethics approval required
Old ethics approval format

Ethics approval(s)
University of Oxford Medical Sciences Inter Divisional Research Ethics Committee, 29/10/2014, ref: MSD-IDREC-C2-2014-024

Study design
Randomised controlled trial of yellow, blue or placebo filters in up to 200 7-11 yr old children to determine whether the coloured filter appropriate for their visual reading symptoms can help them to learn to read.

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Other

Study type(s)
Treatment

Participant information sheet
Please contact Professor Stein for patient information sheets

Health condition(s) or problem(s) studied
Backward reading (dyslexia)

Interventions
Viewing text through yellow, blue or placebo grey filters

Intervention Type
Device

Primary outcome measure
Reading and spelling changes

To be assessed at 3, 6 and 9 months

Secondary outcome measures
1. BAS matrices
2. Recall of digits
3. Similarities changes
4. Visual symptom changes
5. Random dot motion sensitivity changes

To be assessed at 3, 6 and 9 months

Overall study start date
29/10/2014

Completion date
28/10/2022

Eligibility

Key inclusion criteria
Children experiencing reading difficulties

Participant type(s)
Healthy volunteer

Age group
Child

Sex
Both

Target number of participants
200

Key exclusion criteria
1. Not fluent in English
2. Any diagnosed medical condition

Date of first enrolment
30/10/2014

Date of final enrolment
28/10/2019

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Dyslexia Research Trust clinic
179a Oxford Road
Reading
United Kingdom
RG1 7UZ

Sponsor information

Organisation
University of Oxford

Sponsor details
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Sponsor type
University/education

Website
http://www.ox.ac.uk/

ROR
https://ror.org/052gg0110

Funder(s)

Funder type
Not defined

Funder Name
Dyslexia Research Trust (UK)

Results and Publications

Publication and dissemination plan
Publication in neuroscience and educational journals and on DRT website

Intention to publish date
28/10/2023

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request