

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

<b>Submission date</b> 16/12/2014	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 08/05/2015	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 12/06/2020	<b>Condition category</b> Other	<input type="checkbox"/> Individual participant data <input type="checkbox"/> 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

john.stein@dpag.ox.ac.uk

## Contact information

### Type(s)

Scientific

### Contact name

Dr John Stein

### Contact details

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## Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers

REWBIF 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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Oxford  
England  
United Kingdom  
OX1 2JD  
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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