

Ready to Learn? The experiment

Report for parents and teachers

Introduction

This booklet explains the results of a study of school children aged between 5 and 16 and some things that may affect their learning – food, sleep and exercise.

The study was carried out by Teachers TV and two psychologists from the Tavistock and Portman NHS Foundation Trust.

We wanted to find out whether things such as how much sleep a child has the night before school, whether a child ate breakfast or not, and how much exercise a child has before school have an effect on the child's ability to learn.

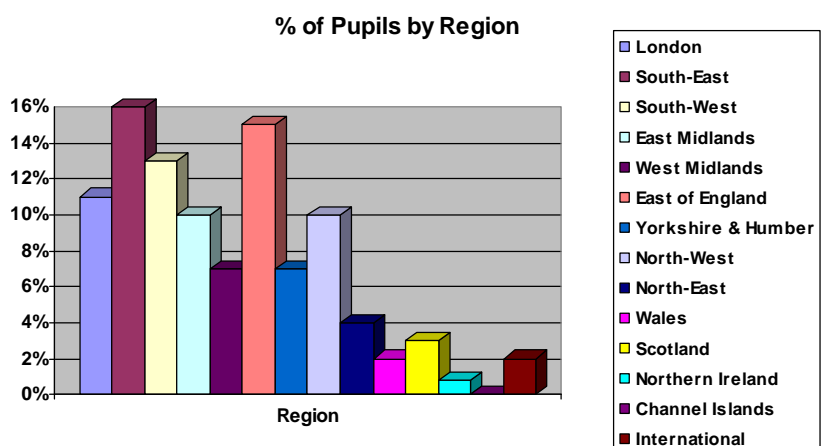
The study was part of National Science and Engineering Week 2008, and encouraged children to take part in research and learn about experiments and results and formed a part of the school curriculum – so as well as being an interesting study the children learned about science too!



The children and schools taking part

78,431 children from 682 schools took part in the study! 98% were in the UK, and half the children were girls, half boys. 41% were aged 10 and under, and 59% were aged 11 and over.

52% of the schools were primary, 44% of schools were secondary, and 4% were special schools.



We would like to thank all of the children, families and schools for taking part.

What we did

We wanted to test out whether the things mentioned above might affect a child's 'readiness to learn'. Readiness to learn includes a number of things a child's brain can do, and includes remembering, being able to change from one way of thinking to another, and being able to organise things. We used three games and activities which allow us to see how well the children are able to do these things:

- The Bird Finder – children are showed pictures of birds on a computer and asked to name them
- Quick Pick - children are showed pictures of animals on a computer and asked to name them
- Tower of London – children are asked to move balls into the correct position in a computer game

These games have been developed by psychologists specifically to test for certain brain abilities.

We also asked children to complete a question sheet which asked them about what they has eaten for breakfast, how much sleep they had the night before and whether they felt tired or rested, and how much and what kind of exercise they had before school that day including how they got to school.

What we found

Food intake before school

- 94% of all children reported that they had eaten breakfast
- 4% of all primary children, 8% of all secondary children and 13% of special school children did not eat breakfast

Rest and sleep

- The average amount of sleep for all children was 9.4 hours
- 42% of all primary, 57% of all secondary and 62% of all special school children felt tired when they woke up
- 13% of all primary, 17% of all secondary and 22% of all special school children said they had not slept well

Travel to school

- 87% of all pupils took 20 minutes or less to travel to school.
- 41% of all pupils walked to school
- 43% of primary, 40% of secondary and 28% of special school children walked
- 42% of all pupils travelled to school by car
- 51% of primary, 33% of secondary and 35% of special school children travel by car
- 17% of all pupils travelled to school by bus or train
- 5% of primary, 27% of secondary and 31% of special school children travel by bus or train
- 2% of all pupils travelled to school by bicycle

Exercise and physical activity

- 25% of all children had some type of physical activity before school
- 36% of primary and 18% of secondary children had some type of physical activity before school



Pupils who had cereal and toast/ bread for breakfast took less time to complete the test, as did those who drank milk and fruit juice.

How these things affected the child's readiness to learn

Breakfast

We found that eating breakfast had the greatest impact on the children's ability to do the games and activities described above. Some foods seemed to be more helpful than others. A number of 'unhealthy' foods/drinks were associated with taking longer to complete the test, namely sweets, crisps, chocolate and fizzy drinks. Those who ate eggs also took longer, as did those who drank tea/ coffee. But pupils who had cereal and toast/bread for breakfast took less time to complete the test, as did those who drank milk and fruit juice.

Sleep and Rest, Exercise

Sleep and Exercise did not seem to have an effect on the children's ability in the games. We think this is because of how we measured the amount of exercise the children had and their sleep. It may be better to have children do some specific exercise as part of the study that can be accurately measured as well as measuring sleep rather than relying on self-reports.

Conclusion

It is important to highlight that one of the main aims of this study was to engage children and young people in thinking about scientific research.

There are things we would do differently next time, but we think it has been a great success overall. It was wonderful to have such a large number of children taking part in the experiment, using new computer based ways of testing the children's abilities – these proved effective and very useful for this type of research. We have showed how important it is to continue finding ways to understand the relationship between physical activity and sleep. More research is needed in these areas.