

## **10 The Development of the Trinity Early Screening Test for Dyslexia (TEST-D)**

***Pauline M. Cogan<sup>1</sup> and Ray Fuller***

### **Introduction**

Among those parenting or teaching dyslexics and in the Dyslexia research community it is generally agreed that early identification of the condition is a good thing. If such students are identified early, then the learning difficulty is not allowed to become complex. The gap between achievement and potential does not widen to the usual degree and the well-known self-esteem and/or behavioural problems do not generally arise. The social and emotional life of the student is enhanced and there is less strain on personnel and time resources in schools. Finally, there is less strain on the educational budget of the Department of Education and Science.

In conversation with teachers of older children who are displaying difficulties, the feeling of regret is often expressed that there is so little time allocated to deal with their difficulties or that the difficulties were not addressed earlier. Still other teachers (and school principals) are horrified when a late diagnosis of Dyslexia is made for a student in the upper reaches of primary school or even in secondary level education.

Early years teachers often comment that, while they can identify some difficulty or difference in a young child's performance, they lack an objective measure against which they can assess the child.

For the above reasons it can be said that it is a good idea to develop an early screening test to predict which children will be at risk for Specific Learning Difficulties during their lives.

There is a rich body of evidence from many parts of the world that there are several early signs of Dyslexia which can be detected in young school children. Among these can be numbered difficulties with naming, pronunciation, syntax, repetition, memory, rhyme, phonemes and visual and motor skills.

The development of the Trinity Early Screening Test for Dyslexia (TEST-D) is an attempt to answer the needs of teachers in relation to early identification of those at risk for Dyslexia. In so doing, it follows an

---

<sup>1</sup> Address for correspondence: Psychology Department, Trinity College, Dublin 2.

important recommendation of The Task Force on Dyslexia (2001), which is that the diagnosis of Dyslexia should be a staged process. The child should first be identified as being at risk for the condition when his early school performance is assessed. Later the same child should receive a full psycho-educational assessment and be diagnosed as having learning difficulties of a specific (or general) nature or no difficulties as the case may be.

There are a few main theories as to what causes Dyslexia, a condition which may include visual, phonological, motor, linguistic, memory and attention deficits. TEST-D takes the view that Dyslexia can be expressed in any of these areas and so has developed a wide battery of short sub-tests to identify the many early signs of Dyslexia in young school goers.

### **The Target Population**

It is a good idea to try to predict as soon as possible which children will suffer from learning difficulties sometime in their school career. Since Irish children enter primary school anytime from the age of 4 years to 6 years, the target population for the sub-test battery is from age 4 years to 6.5 years. This takes in the classes of Junior and Senior Infants and some children in First class.

### **Sensitivity to Age and Development**

Children of these ages differ greatly in development; the sub-tests must, therefore, be sensitive to the age and particularly the level of development of the child. For this reason there are gradations of difficulty within subtests and between subtests. For example, the early items in a subtest may be quite easy while later items may be more challenging. Further into the test battery the processes may be more demanding.

### **The Sub-Test Battery**

TEST-D contains a wide battery of subtests which check for level of skill in areas known to be predictive of Dyslexia in young school children. For example, phonological acquisition, the various kinds of memory and visuo-motor skills are examined. The battery is designed to be colourful, lively and enjoyable for children to do.

### **Two Phases**

There are two phases in the project to develop the TEST-D, Phase 1 and Phase 2.

*Phase 1* is when the child is initially tested on the battery of subtests; that is, when he/she is aged between 4 and 6 years. Children from all areas of advantage and disadvantage and across socio-economic groupings are selected at random in their schools to receive a battery of tests which are appropriate for their age/level of development.

*Phase 2* is when the child turns 8 years of age. Forty percent of the children assessed in Phase 1 (including the 20% who generally scored lowest) will be called back for a full psycho-educational assessment when they turn 8 years of age. In this way it can be determined if the child has a Specific or General Learning Difficulty (or no difficulty). A look back to the performance of these children at Phase 1 (when they were aged between 4 and 6 years) will indicate which of the subtests correctly identified the dyslexic children.

### **The Predictive Subtests**

Two forms of statistical analysis will be performed to identify which of the battery of subtests are predictive of Dyslexia. These are *Stepwise Regression Analysis* and *Factor Analysis*.

Stepwise Multiple Regression identifies the subtests administered at Phase I contributing most variance to the reading scores at Phase 2.

The second statistical analysis used at this stage is called Factor Analysis. This form of analysis is based on the principle that highly correlated test scores can be combined together into 'factors'. Factor analysis allows us to reveal the structure in the relationship between the subtest scores. It is also a data reduction tool to identify useful predictors. Data reduction is necessary because, although we may have a test (with many subtests) that identifies children with Dyslexia, we must reduce the number of subtests necessary to include in the TEST-D down to something more manageable for use in the classroom.

These processes will allow us to develop prototype 1 for TEST-D.

### **National and International Interest**

There has been a great deal of interest in the development of TEST-D at national and international level. An outline presentation of the project to develop TEST-D also excited significant interest from those present at the British Dyslexia Association Annual Conference. The interest and support for the project, in particular from the INTO, has had a dynamic effect on the progress of the test development. In February 2003 this project was awarded the Sean Brosnahan Memorial Award for Research into

Educational Difficulties. After an article about the project appeared in IN TOUCH magazine (Cogan, 2003), over 800 expressions of interest from active and retired teachers were received in just two months. It was from this expression of interest that the test administrators for the pilot and main studies were drawn.

### **The Pilot Study**

The pilot study to develop TEST-D took place in the Greater Dublin Area between February and November 2004. 19 trained Primary School teachers undertook to come for training in the rationale and administration of the test battery. A training manual was produced to guide test administration. 95 children aged 4 to 6.5 years participated in the study. The aims of the pilot were to gain information about:

- age appropriateness of the individual subtests;
- practicalities and logistics of the test suite;
- scaling and floor-ceiling effects in subtests;
- test reliability.

The pilot study provided us with a refined screening system for the main study.

### **The Main Study**

In the main study 200 teachers are engaged in administering the subtests to children chosen at random from 200 schools. The children come from areas of advantage and disadvantage and from all socio-economic groupings. Each teacher obtained data from between 2 and 6 children. It is expected that the main study will deliver a full matrix of data from over 1000 children (roughly equal numbers of males and females). At the time of going to press about half of the subtest battery has been administered. The test administrators report high interest from the children who love carrying out the tasks. It is expected that the full test battery will have been administered by June 2005.

The results from the main study will allow us to identify those children for participation in Phase 2.

### **Timeline for the Production of Prototype 1 of TEST-D**

About one year after receiving the battery of subtests, selected children who have reached eight years of age will begin to receive a full assessment using WISC and WORD. Each year for the next two years as the younger children turn eight, this process will be followed. The predictive battery for the whole participant pool is expected to be identified by the end of 2008.

### Further Study

This process of identifying the important predictors of Dyslexia is limited by the resource demands of fully assessing the entire sample of participating children in Phase 2. Hence, the planned use of only 40% of the original sample in Phase 2. It would, however, strengthen the project if we could have the resources to run diagnostic tests for Dyslexia on all 1000+ children in our main study and use that sample to identify the key predictors in the test battery.

### References

- Cogan, P. (2003). The Trinity Early Screening Test (TEST-D). *InTouch Journal of the Irish National Teachers' Organisation*. December, p. 230.
- Task Force on Dyslexia (2001). *Report*. Dublin: Stationery Office.
- Wechsler, D. (1992). *Wechsler Intelligence Scale for Children (WISC-III<sup>UK</sup>, 3rd edition)*. London: The Psychological Corporation.
- Wechsler, D. (1993). *Wechsler Objective Reading Dimensions (WORD)*. London: The Psychological Corporation.

### Acknowledgements

The authors wish to acknowledge support received from many people and organisations during this long term study.

The Sean Brosnahan Memorial Fund  
The Irish National Teachers' Organisation  
Retired Teachers' Network  
The TEST-D Subcommittee of The Blackrock Education Centre, Co Dublin  
The Board of Management of Scoil San Treasa, Mount Merrion, Co. Dublin  
National Training Development Institute, Roslyn Park, Sandymount, Dublin 4  
Dyslexia Association of Ireland  
The National Rehabilitation Board (NRB)  
Maeve Heffernan  
Patrick O'Shea  
Dr. Seamus O Canainn  
Dr. Michael Gormley  
A&L Goodbody  
Reads Stationers and Photocopying  
The Education Centres of Athlone, Blackrock, Cork, Drumcondra, Enniscorthy,  
Limerick, Sligo  
Teachers, Parents and children of 200 schools around Ireland