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Purpose: This poster aims to present results from a study that aimed to characterize Portuguese students at risk of specific learning disabilities based on results of **Curriculum-based measurement (CBM)** in reading comprehension. This study was conducted in the context of the **first level** of a **Response to Intervention Model (RTI)**, which is a multi-tiered system of prevention that integrates assessment and intervention, to maximize students' achievement (Heinemann, Bolanos, & Griffin, 2017; NCRI, 2019). It includes four components: universal screening, multi level prevention, progress monitoring and data-based decision making.

Response to Intervention Model (RTI)

Universal screening assessment of all students aims to identify, as early as possible, those who are at risk in the regular classroom.

Data-based decision making Consists in consider the results of the progress monitoring for future intervention and in the tier change.

Progress Monitoring During the different tiers of intensive intervention is made, weekly or monthly, the progress monitoring of these students.

Multi level prevention These students at risk need additional and intensive instruction integrated in a multi level prevention and intervention system, organized in intensive tiers of instruction, to improve learning outcomes.

Level III

Level II

Level I
Primary Prevention

Fonte: <http://www.rti4success.org/>

Curriculum-based measurement (CBM) (Deno, 1985) in reading

- Has been used for **universal screening** and **progress monitoring** within a response to intervention conceptual model as it is a technically adequate system of school-wide screening and progress monitoring in reading that promotes an early identification of students at risk academically for specific learning disabilities in reading (Fuchs, D., Fuchs, L.S., & Compton, 2012).
- Consists in used short-term and easy-to-administer tests and is administered and quoted in a standardized manner. It results in indicators of overall proficiency in the academic areas evaluated (for example in reading) (Stecker, Lembke, & Foegen, 2008).

CBM-Maze

To understand reading comprehension, we can use **Maze-probes** (Busch & Lembke, 2005) that consists of students reading silently text passages. Every seventh word is deleted and replaced with three word choices and students have to select the correct word from each set of word choices (Deno et al., 2009).

Level 1 of the RTI model, it is important to deepen the **knowledge about students at risk in reading**, namely with regard to the **risk factors** that may be associated with them. This are, for example physical and clinical conditions, as well as differences in language acquisition and development, and then to a set of predictors that may be present at school (Snow, Burns, & Griffin, 1998).

Information obtained with CBM

Risk factors

Will be useful in:

- The early identification of their difficulties.
- The preparation of appropriate intervention (McCardle, Scarborough, & Catts, 2001).
- Preventing more severe difficulties (Snow, Burns, & Griffin, 1998).

Goals

To show:

- the differences between students at risk and not at risk.
- qualitative data related to environmental and personal factors that were present in students considered at risk.
- acceptance and reliability of the CBM probe.

Method

- A quantitative research was carried out within a sample of 82 third grade students (47 girls and 35 boys) from a School Cluster in the north of Portugal.
- Data were collected using a **CBM Maze** probe **three times a year** and analyzed by descriptive and inferential statistics.
- Students considered at risk were those with results below the **20th percentile** (Deno et al, 2009).
- Additionally we characterized the risk factors that were found in the students that below the 20th percentile. To collect that data we used a questionnaire.

Results

- The Maze probes received excellent acceptance among both teachers and students, although it was used in the district for the first time.
- The test retest reliability analysis show that the values of the Person ρ s correlation ranged from .647 to .831 when considering different score rules.
- When considering **the score rule of "count the number of correct choices selected prior to the first of three consecutive errors"**, at the end of 3rd grade:
 - The benchmark was 15.99 (DP=5.889), and the annual growth rate was .27 (DP=.16);
 - Girls (M=16.23) presented a higher average value than boys (M=15.66), though the difference is not statistically significant.
 - Ten students were considered at risk throughout the whole school year; Eight of these students were still at risk by the end of 4th grade;
 - The mean results from students who were never at risk (M=18.91) was significantly higher than the mean results from those who have been at risk throughout the year (M=8.30);
 - The annual growth rate of students who were never at risk (.32) was significantly higher than the growth rate of students who were at risk throughout the whole year (.18);
 - The Matthew effect was visible in our results when we compare students at risk with those not at risk;
 - The articulation problems, delay in language development and the absence of reading experience in pairs with their parents stand out as reading risk factors in these participants.

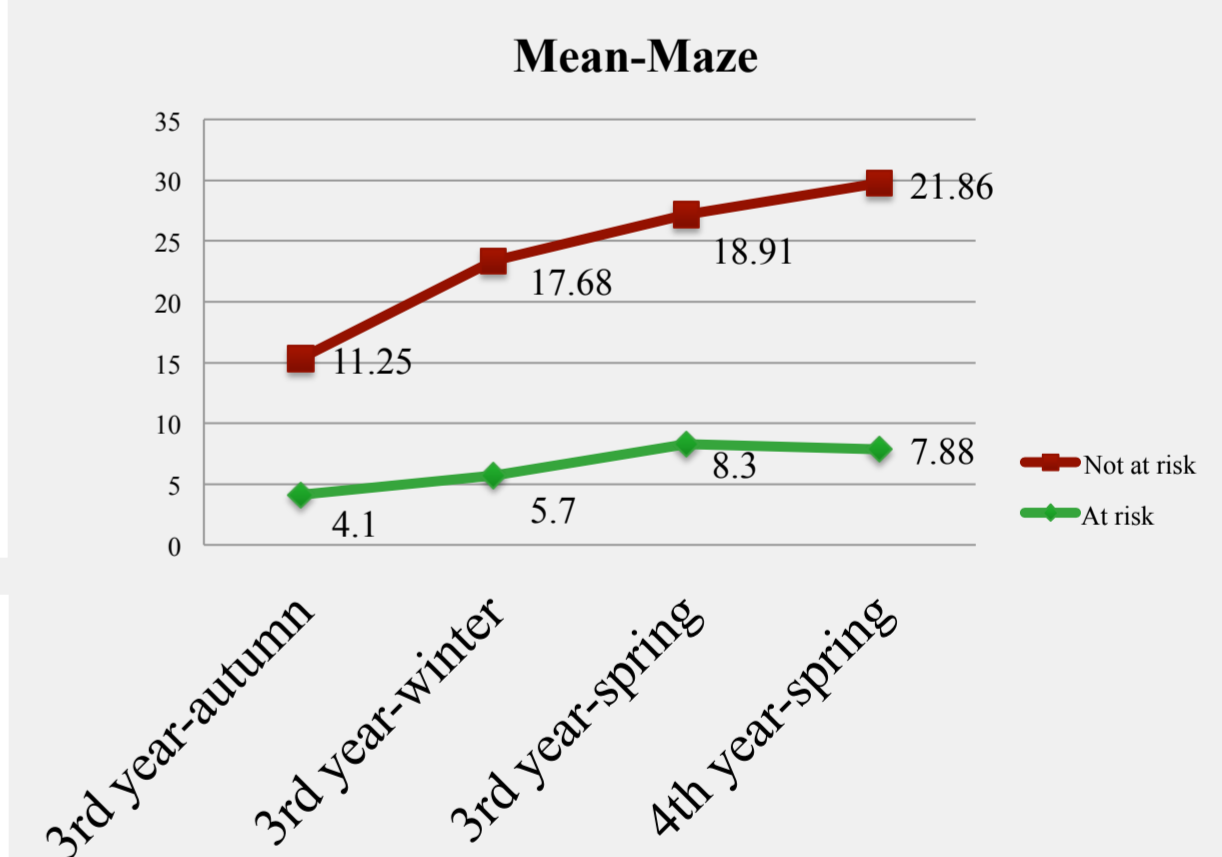


Figure 1- Results in autumn, winter and spring.

In the future it is necessary to implement intervention programs at the secondary and tertiary levels as recommended by the research within the Response to Intervention Model. Based on these results we consider that the use of RTI and CBM would be a valid and reliable option to consider in the educational context of European countries.

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