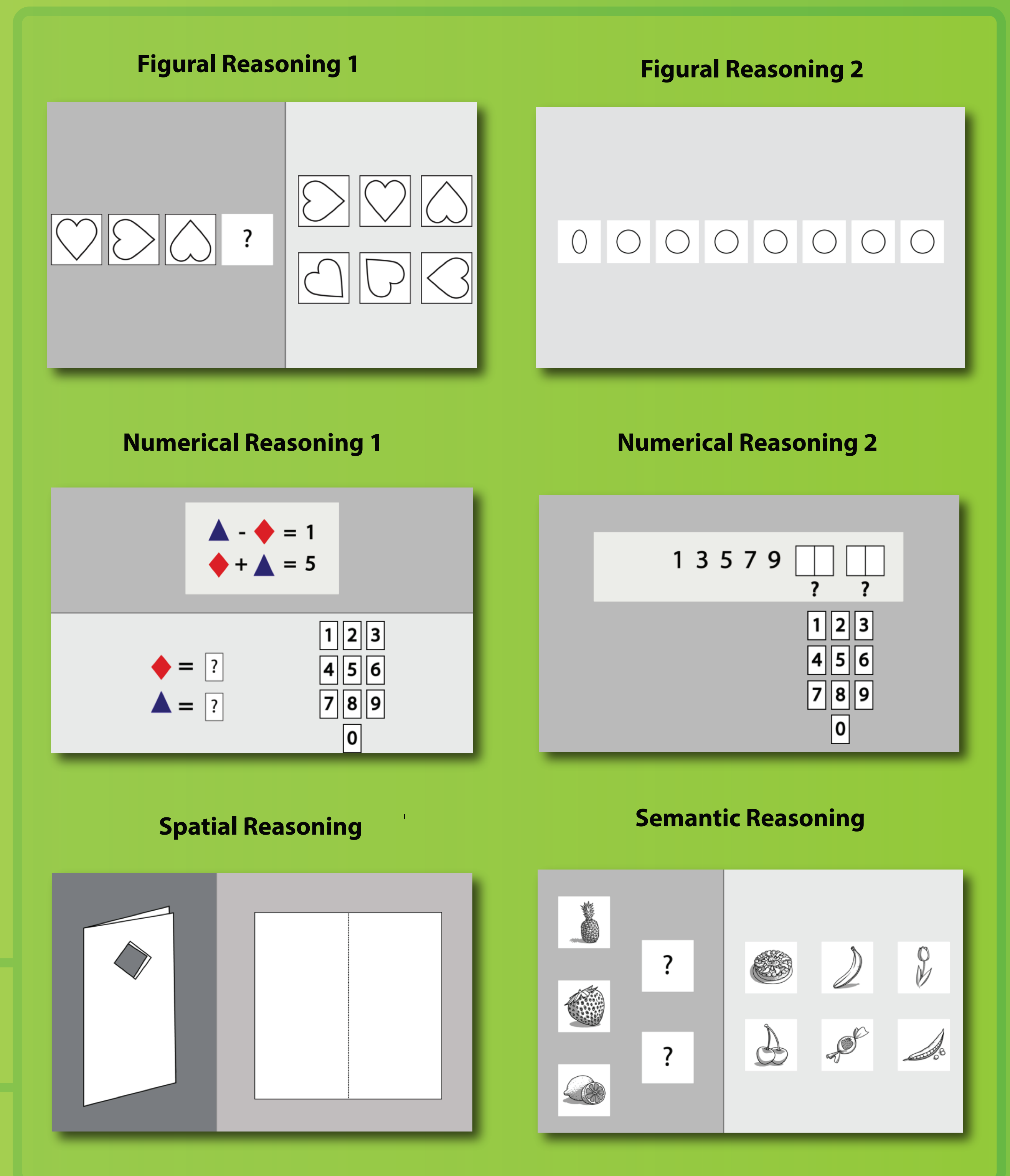
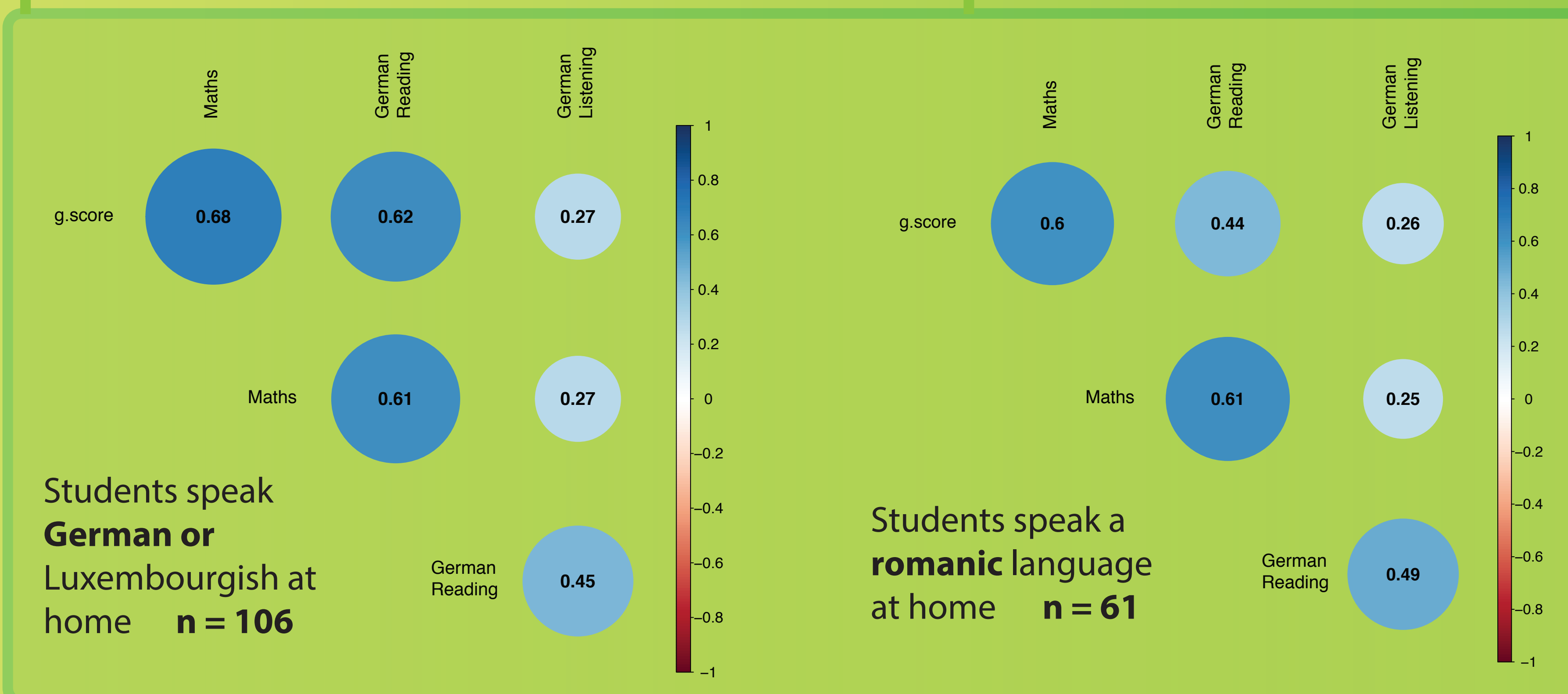


The "Test of Cognitive Ability" ("TCP") is a **language-free** test of reasoning ability that was created at the heart of the Luxembourg Centre for Educational Testing (LUCET). The TCP was initially developed for children at the **age of 10** and can be applied in a group context. Since no advanced language-skills are required in order to take this test, it is perfectly suited not only to serve as a **cognitive ability screener** in a **multilingual context**, but also to study the relationship of cognitive ability and **academic success** within a demanding schoolsystem that deals with a very complex mixture of student backgrounds (spoken languages, socio-economic status, culture, etc.). Using traditional intelligence tests with language-based tasks and instructions could, in this context, result in biased data since maximum performance relies on a good understanding of task requirements. Being language-free, the TCP can help in gaining a more precise understanding of academic performance under different circumstances and **prevent wrong conclusions** as to the **fairness** of curricular requirements for **different student populations**.



Examples of TCP tasks from 4 reasoning domains: Figural, Numerical, Spatial and Semantic Reasoning

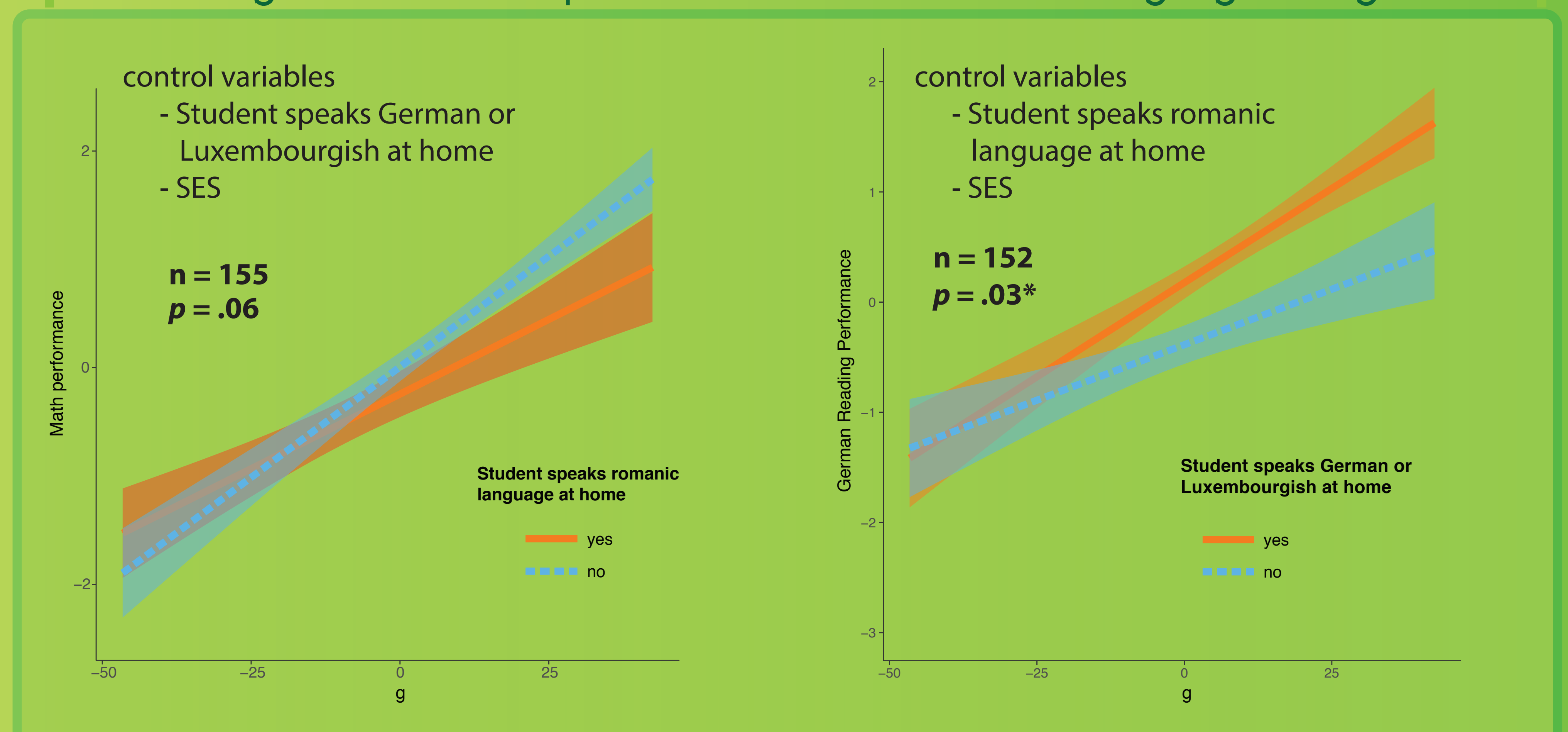
Pearson correlations for the TCP g.score with school performance by language background



303 students in **Cycle 3.2** (age 10) participated in a study designed to validate a paper-based version of the "Test of Cognitive Potential". We additionally collected their performance on Luxembourg's national standardized school performance tests "Épreuves Standardisées", completed one year prior in **Cycle 3.1**. On the left you find a graphical representation of the **relationship** between cognitive potential (a "g"-score derived from all the TCP subtests presented above) and **school performance** (Mathematics, German Reading, German Listening) **by language background** (students speaking Luxembourgish or German at home vs. Students speaking a romanic language at home). It can be observed that **the relationship between cognitive potential and school performance tends to be weaker for students speaking a romanic language at home**.

We deepened the exploration of the impact of language spoken at home on the relationship between cognitive potential and school performance with **regression analysis**, controlling for socio-economic status (SES). On the right you can find **interaction effects** of language spoken at home and cognitive potential on Math performance and German Reading. We can observe that for **students speaking a foreign language at home**, a gain in cognitive potential corresponds to **less gain in educational performance** compared to students speaking Luxembourgish or German with their parents.

Effect of g.score on school performance: interaction with language background



Conclusion:

- 1) The **TCP** allows studying the relationship between cognitive potential and school performance in a **non-biased** manner.
- 2) The **relationship** between cognitive potential and school performance is **weaker** for students speaking a **foreign language at home**.