Hair et al. (2010) and Bryne (2010) argued that data is considered to be normal if skewness is between ‐2 to +2 and kurtosis is between ‐7 to +7. More rules of thumb attributable to Kline (2011) are given

Skewness and kurtosis were measured and included in Table 3, along with data on missing values. Four ICT measures in Finland were beyond the recommended ±2 standard deviations cutoff for normality, with only two in Bulgaria (George & Mallery, 2010; Little, 2013). Finland’s high kurtosis will be discussed in the *Limitations* section.

Inferential statistics

Univariate population parameters on digitally assessed reading performance and

all ICT measures are presented in Table 1. The statistics show that the mean digitally

assessed reading performance of Dutch students was higher (t (511876) = 35.63,

p < .001) than the international average of all countries participating in PISA 2015.

The mean score for availability of ICT resources in the Netherlands is higher than

the availability of resources in countries participating in the ICT familiarity questionnaire

(t (334197) = 70.75, p < .001). Moreover, positive scores for students’ use

of ICT at school in general and outside school for schoolwork indicate that their

use is also higher than the international average (t (334197) = 33.20, p < .001 and t

(334197) = 7.39, p < .001). Students’ use of ICT outside school for leisure, on the other

hand, is lower than the international average (t (334197) = 11.14, p < .001). Results

furthermore show that levels of interest (t (334197) = 4.34, p < .001) are higher than

the international average, whereas perceived competence (*t* (334197) = 1.49, *p* = .136)

and perceived autonomy (*t* (334197) = .73, *p* = .014) are comparable to the international

averages.

Correlations

Correlations between digitally assessed reading performance and all ICT measures are

presented in Table 2. All correlations, with the exception of the correlations between

digitally assessed reading performance and ICT resources and ICT use outside school

for schoolwork, were significant. The relationship between digitally assessed reading

performance and both ICT use at school in general and outside school for leisure are

negative, indicating that students who spend more time using ICT at school in general

or outside school for leisure have lower reading scores. The positive correlations for

ICT attitudes and digitally assessed reading performance indicate that higher levels of

interest, perceived competence, and perceived autonomy are related to higher digitally

assessed reading performance.

Results furthermore show that the availability of resources is positively related to students’

ICT use and ICT attitude. In addition, the three indicators of ICT use are moderately

correlated, as are the three indicators of ICT attitudes. The relationship with ICT

attitudes is higher for the use of ICT outside school for leisure than for the use outside

school for schoolwork or at school in general.

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The descriptive statistics of the variables used in our analysis are shown in Table 2, detailed country by country. There are differences in sample size country to country, with Italy and Spain being the countries with the highest number of sampled students6. Glancing at the results, the analyzed variables are heterogeneous between countries. Students from Belgium, Germany, Finland, Ireland and the Netherlands have higher average PISA scores in all the tests, while students from Greece and Sweden have the lowest PISA scores in our analytic sample.

Looking at the three ICT indices, clear differences between the countries are detected: Danish students show high average values for these indices, which indicates that they are top users of ICT both at school and at home, and slightly lower values for entertainment. The other countries show much lower values in these variables, and can even be negative in all of them,

see, for example, Ireland. Apart from this, there is no clear pattern: students from some countries report a high ICT home use together with low use for entertainment (the Netherlands) or high use for entertainment and low home use (Italy). The availability of ICT devices at school is also different from country to country. Spain, Germany, Ireland and, above all, Belgium and Italy, show a negative value for this index. The Netherlands, Denmark, Finland and Sweden are the countries with the highest positive values. When considering the individual variables, there are more first-generation immigrants in some countries, such as Spain, Ireland and Belgium. At least one year’s universal pre-primary education - ISCED 0 - is common practice in all countries except Ireland, where 14% of students have no ISCED 0. On the contrary, as a practice, grade retention (students repeating a year) is applied differently across countries. In Spain, Belgium and the Netherlands there are

very high rates of year repetition (above 20%), while they are very low in Denmark, Finland, Greece, Ireland, Italy and Sweden (below 5%). The modal grade retention level shows negative values for most of the countries analyzed. Only in Ireland, Belgium and the Netherlands is there a positive average value for the grade retention variable. Truancy rates also vary across countries: in Spain, Greece, Portugal and Italy truancy shows the highest rates, the opposite is true for Austria, Belgium, Germany, the Netherlands and Ireland, which have the lowest percentage of truancy rates. Similarly, the PISA ESCS index also differs across countries: the wealthier students are in the Nordic area, the opposite is true for the Mediterranean countries.

At school level, we also find that features of the schools attended by the majority of students vary from country to country: more students are in private schools in Ireland, Belgium, Spain and the Netherlands; more students are in rural areas in Austria, Denmark, Ireland, Portugal and Sweden. Finally, in all countries truancy is seen to be a worse problem for the head teachers/principals than for the students, but schools and students agree with regards to household socio-economic levels. Class size is around 25 students per class, lower only in Demark and Belgium.