***Supplementary Materials: Children with EAL***

Although we have limited information regarding the nature of children’s linguistic background in this sample, it is pertinent to consider whether the relationships we have seen in children who are not listed as having English as an additional language (EAL) at school entry hold for those who are. Children with EAL were not included in our original analysis as factors such as length and degree of exposure to English are likely to have a much greater impact on receptive language scores at school entry than factors related to sleep. We therefore hypothesised that we would not find a relationship between sleep variables and BPVS-2 standard scores in this sample.

552 children (269 boys, 276 girls, and 7 of unknown sex) were included in this analysis by virtue of being listed as EAL in the Starting School dataset, and on account of having sleep data from three or more time points. 336 children contributed five data points, 156 contributed four and 60 contributed three. The median national IMD decile for the sample was 1 (IQR = 1), and the local IMD decile within Bradford was 2 (IQR = 3) (for national IMD decile the difference between EAL and non-EAL group medians U = 226390, p < 0.001; for local IMD decile the difference between EAL and non-EAL group medians U = 236870, p < 0.001). Nearly all the children in the EAL sample (539) were first born, the remaining had a single older sibling. The maternal ethnicity of 518 children was reported as ‘Asian or British Asian’, with the remaining 34 (6.2%) fell into other categories. 370 mothers moved the UK from abroad before the birth of their child, the mean age for moving was 19.40 years (sd = 7.76). 38 mothers reported that they smoked cigarettes at three months pregnant. 495 children were breastfed for at least one day; the mean number of days being breastfed was 94.98, a little over three months (sd = 102.29). Median Apgar score at five minutes after birth was 9, with a minimum of 1 and a maximum of 10 across the sample.

Looking at sleep parameters, a very slight increase in night-time sleep was observed, from 8.82 hours to 8.85 hours (F(4,2478) = 4.79, p<0.001) over the course of the 30 months when data were collected. Day sleep decreased from 4.48 hours to 3.09 hours (F(4,2478) = 53.01, p<0.001). As with the non-EAL sample, we tested our assumption that the TST\_B1 and DIF\_B1 statistics were able to characterise rates of change in sleep duration across time points. If so, the average slope across participants should be significantly different from zero, suggesting a non-zero rate of change in TST and DIF scores. One sample *t*-tests revealed that this was indeed the case for both TST\_B1 (*d* = -0.59, *t*(551) = -13.93, *p* < 0.001) and DIF\_B1 (*d* = 0.32, *t*(551) = 7.62, *p* < 0.001). Table SM1 gives values for Night sleep and Day sleep across the data collection points, along with TST and DIF. The pattern of data is notably different to the sample of children who are not EAL, with less night-time sleep at all data points and more day-time sleep, although total sleep time is strikingly comparable.

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**Table SM1 here**

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According to the Starting School dataset, the BPVS-2 (Dunn et al., 1997) was carried out with 389 children with EAL at a mean chronological age of 58.74 months (sd = 3.44). The mean standardised score for the sample was 96.91 (sd = 14.80), with a minimum standard score of 39 and a maximum of 161. Upon starting school, 123 children were in receipt of free school meals (22% of the sample), 14 had an Education Health and Care Plan, and a further 85 had other support for special educational needs in school. As 163 children did not have a measure of receptive vocabulary, they were unable to form part of our exploratory models.

All hypothesised terms were included in the model, with interactions being removed one by one if they did not significantly contribute to model fit. All interactions were removed from the model, leaving only the intercept (mean) and slope of TST and DIF in the model. We added the covariates Sex and IMD in as covariates, but the model did not significantly predict the BPVS-2 standard scores at school entry (F(6,376) = 0.82, p = 0.559), with no single terms emerging as significant predictors. This result was unsurprising given that degree and intensity of exposure to English (regarding which, data were not available) is very likely to soak up the majority of the variance here given that the outcome variable of interest was an English vocabulary test.