**Appendix: Language Exposure Questionaire**

**XXXInsert here the full questionnaire XXX**

**Details of the calculation of E, percentage of exposure to English.**

Section B or section C are based on the same calculations. Therefore we only detail the calculation for section B.

**Section B: Both parents speak the same Additional Language to the child.**

1. **Input from the parents:**

Number of hours a week in English-speaking nursery/childminder/playgroup = N

Number of sleeping hours per night = S

Does the Mother always speak the Additional Language to the Child, or usually, or equally often English and the AE, or usually English, or always English (5 possible responses) = M

Does the Father always speak the Additional Language to the Child, or usually, or equally often English and the AE, or usually English, or always English (5 possible responses) = F

When together, who speaks most to the child? Mother, Father or Both = Most

Number of hours per week spent with Mother only = HM

Number of hours per week spent with Father only = HF

1. **What does the calculation entail:**
2. **Assign a percentage to M and F.**

If M (or F) = Always Additional Language then ME (or FE) = 100

If M (or F) = Usually Additional Language then ME (or FE) = 75

If M (or F) = Equally AL and English then ME (or FE) = 50

If M (or F) = usually English then ME (or FE) = 25

If M (or F) = always English then ME (or FE) = 0

1. **Correct HM and HF to give more weight to the time spent with the Mother.**

Corrected time with Mum = CHM = HM\*4/3

Corrected time with Dad = CHF = HF\*2/3

1. **Assign a value (SM) from Most, to give more weight to the Mum. What is obtained corresponds to the percentage of the Mother’s input during the time when both parents are with the child.**

If Most = Mother then SM = 90

If Most = Father then SM = 50

If Most = Both then SM = 70

1. **Calculate the number of hours per week with both parents together**

$$TBP=7\left(24-S\right)-N-HM-HF$$

1. **Calculate the total number of hours of English exposure in a week (E) with the following formula:**

$E=min⁡(\frac{CHM\left(100-ME\right)}{100}+\frac{CHF\left(100-FE\right)}{100}+N+0.01\*TBP\*\frac{SM\left(100-ME\right)}{100}+0.01\*\frac{TBP\left(100-SM\right)\left(100-FE\right)}{100},7\*\left(24-S\right))$

With

$$\frac{CHM\left(100-ME\right)}{100}= English from mother when mother alone$$

$$\frac{CHF\left(100-FE\right)}{100}=English from father when father alone$$

$$0.01\*TBP\*\frac{SM\left(100-ME\right)}{100}=English from the mother when both parents together$$

$$0.01\*\frac{TBP\left(100-SM\right)\left(100-FE\right)}{100}=English from the father when both parents together$$

The “min” function in the equation is introduced to make sure that parents do not overestimate the total number of available awake hours in the week.

1. **Calculate the percentage of exposure to English**

$$P=\frac{E}{7\left(24-S\right)}$$

1. **How does the percentage of exposure vary with the different parameters?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| nursery 30 hours per week |  |  |  |  |  |  |  |  |
| sleep 11 hours per night |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | usually AL |  | Frederique and Guillaume |
|  | Dad:  | usually AL |  |  |  |  |
|  | Mum and Dad together: |   |   | equal amount |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time with Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 53 | 53 |
| **5** | 50 | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 53 |
| **10** | 49 | 49 | 50 | 51 | 51 | 52 | 52 | 52 | 52 |
| **15** | 48 | 49 | 49 | 50 | 50 | 51 | 51 | 52 | 52 |
| **20** | 48 | 48 | 49 | 49 | 50 | 50 | 51 | 51 | 52 |
| **25** | 47 | 48 | 48 | 49 | 49 | 50 | 50 | 51 | 51 |
| **30** | 47 | 47 | 48 | 48 | 49 | 49 | 50 | 50 | 51 |
| **35** | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 50 | 50 |
| **40** | 46 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 50 |
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|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | usually AL |  | Patric and Julia |  |
|  | Dad:  | usually English |  |  |  |  |
|  | Mum and Dad together: |   |   | equal amount |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |
|   | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time with Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 60 | 59 | 59 | 59 | 58 | 58 | 58 | 57 | 57 |
| **5** | 60 | 60 | 60 | 59 | 59 | 58 | 58 | 58 | 57 |
| **10** | 61 | 61 | 60 | 60 | 59 | 59 | 59 | 58 | 58 |
| **15** | 61 | 61 | 61 | 60 | 60 | 60 | 59 | 59 | 58 |
| **20** | 62 | 62 | 61 | 61 | 61 | 60 | 60 | 59 | 59 |
| **25** | 63 | 62 | 62 | 61 | 61 | 61 | 60 | 60 | 60 |
| **30** | 63 | 63 | 62 | 62 | 62 | 61 | 61 | 61 | 60 |
| **35** | 64 | 63 | 63 | 63 | 62 | 62 | 61 | 61 | 61 |
| **40** | 64 | 64 | 63 | 63 | 63 | 62 | 62 | 62 | 61 |
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|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | usually English |  |  |  |  |
|  | Dad:  | usually AL |  |  |  |  |
|  | Mum and Dad together: |   |   | equal amount |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time with Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 73 | 75 | 78 | 80 | 82 | 84 | 86 | 89 | 91 |
| **5** | 71 | 73 | 75 | 77 | 80 | 82 | 84 | 86 | 88 |
| **10** | 68 | 71 | 73 | 75 | 77 | 79 | 82 | 84 | 86 |
| **15** | 66 | 68 | 70 | 73 | 75 | 77 | 79 | 81 | 84 |
| **20** | 64 | 66 | 68 | 70 | 72 | 75 | 77 | 79 | 81 |
| **25** | 61 | 63 | 66 | 68 | 70 | 72 | 74 | 77 | 79 |
| **30** | 59 | 61 | 63 | 65 | 68 | 70 | 72 | 74 | 76 |
| **35** | 57 | 59 | 61 | 63 | 65 | 68 | 70 | 72 | 74 |
| **40** | 54 | 56 | 59 | 61 | 63 | 65 | 67 | 70 | 72 |
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|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | usually English |  |  |  |  |
|  | Dad:  | usually AL |  |  |  |  |
|  | Mum and Dad together: |   |   | more Mum |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time with Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 80 | 82 | 83 | 85 | 86 | 88 | 90 | 91 | 93 |
| **5** | 77 | 79 | 80 | 82 | 84 | 85 | 87 | 88 | 90 |
| **10** | 74 | 76 | 77 | 79 | 81 | 82 | 84 | 86 | 87 |
| **15** | 71 | 73 | 74 | 76 | 78 | 79 | 81 | 83 | 84 |
| **20** | 68 | 70 | 71 | 73 | 75 | 76 | 78 | 80 | 81 |
| **25** | 65 | 67 | 69 | 70 | 72 | 73 | 75 | 77 | 78 |
| **30** | 62 | 64 | 66 | 67 | 69 | 71 | 72 | 74 | 75 |
| **35** | 59 | 61 | 63 | 64 | 66 | 68 | 69 | 71 | 73 |
| **40** | 56 | 58 | 60 | 61 | 63 | 65 | 66 | 68 | 70 |
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|  |  |  |  |  |  |  |  |  |  |
| nursery 10 hours per week |  |  |  |  |  |  |  |  |
| sleep 11 hours per night |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | always AL |  | Caroline and Jeremy |
|  | Dad:  | always English |  |  |  |  |
|  | Mum and Dad together: |   |   | more Mum |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|   | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time wth Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 20 | 19 | 19 | 18 | 18 | 17 | 17 | 16 | 15 |
| **5** | 23 | 22 | 22 | 21 | 21 | 20 | 20 | 19 | 19 |
| **10** | 26 | 26 | 25 | 24 | 24 | 23 | 23 | 22 | 22 |
| **15** | 29 | 29 | 28 | 28 | 27 | 26 | 26 | 25 | 25 |
| **20** | 32 | 32 | 31 | 31 | 30 | 30 | 29 | 28 | 28 |
| **25** | 35 | 35 | 34 | 34 | 33 | 33 | 32 | 32 | 31 |
| **30** | 39 | 38 | 37 | 37 | 36 | 36 | 35 | 35 | 34 |
| **35** | 42 | 41 | 41 | 40 | 39 | 39 | 38 | 38 | 37 |
| **40** | 45 | 44 | 44 | 43 | 43 | 42 | 42 | 41 | 40 |
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|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | always English |  |  |  |  |
|  | Dad:  | always AL |  |  |  |  |
|  | Mum and Dad together: |   |   | more Mum |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **time with Mum alone** |  |  |  |  |  |  |  |  |
| **time wth Dad alone** | **0** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** |
| **0** | 91 | 93 | 96 | 98 | 100 | 100 | 100 | 100 | 100 |
| **5** | 86 | 89 | 91 | 93 | 96 | 98 | 100 | 100 | 100 |
| **10** | 81 | 84 | 86 | 88 | 91 | 93 | 95 | 98 | 100 |
| **15** | 76 | 79 | 81 | 83 | 86 | 88 | 91 | 93 | 95 |
| **20** | 71 | 74 | 76 | 78 | 81 | 83 | 86 | 88 | 90 |
| **25** | 66 | 69 | 71 | 74 | 76 | 78 | 81 | 83 | 85 |
| **30** | 61 | 64 | 66 | 69 | 71 | 73 | 76 | 78 | 80 |
| **35** | 56 | 59 | 61 | 64 | 66 | 68 | 71 | 73 | 76 |
| **40** | 52 | 54 | 56 | 59 | 61 | 63 | 66 | 68 | 71 |
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|  |  |  |  |  |  |  |  |  |  |
| **control** |  |  |  |  |  |  |  |  |  |
| when both Mum and Dad always speak English, then E = 100 always |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| when both Mum and Dad always speak Additional Language and no nursery, E = 0 always |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Mum:  | always AL |  |  |  |  |
|  | Dad:  | always AL |  |  |  |  |
|  | Mum and Dad together: |   |   | irrelevant |  |  |  |  |
| time spent with Mum or Dad alone does not change anything |  |  |  |  |
| whether the Mum or the Dad speaks more often when together doesn't change anything |  |
| here the example is given for sleep 11 hrs per night |  |  |  |  |  |
| What matters here is the time spent at the Nursery: |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| hrs per week nursery | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| E | 0 | 5 | 11 | 16 | 22 | 27 | 33 | 38 | 44 |

**Section C – Only one parent speaks the Additional Language to the child.**

**Input from the parents:**

Identifying the English-speaking parent: EP (EP = 1 then the Mother is English-speaking; EP = 2 then the Father is English-speaking)

Number of hours a week in English-speaking nursery/childminder/playgroup = N

Number of sleeping hours per night = S

Does the English-speaking parent always speak English to the Child, or usually, or equally often English and the AE, or usually AE, or always AE (5 possible responses) = ESP

Does the AE parent always speak the Additional Language to the Child, or usually, or equally often English and the AE, or usually English, or always English (5 possible responses) = AEP

When together, who speaks most to the child? English-speaking parent, AE-speaking parent, or both = Most

Number of hours per week spent with English-speaking parent only = HESP

Number of hours per week spent with AE-speaking parent only = HAEP

1. **Assign a percentage to FE and ME.**

**If Mother is the English-speaking parent (EP = 1):**

If ESP = Always English then ME = 100

If ESP = Usually English then ME = 75

If ESP = Equally AL and English then ME = 50

If ESP = usually AL then ME = 25

If ESP = always AL then ME = 0

If AEP = Always AL then FE = 0

If AEP = Usually AL then FE = 25

If AEP = Equally AL and English then FE = 50

If AEP = usually English then FE = 75

If AEP = always English then FE = 100

**If Father is the English-speaking parent (EP = 2):**

If ESP = Always English then FE = 100

If ESP = Usually English then FE = 75

If ESP = Equally AL and English then FE = 50

If ESP = usually AL then FE = 25

If ESP = always AL then FE = 0

If AEP = Always AL then ME = 0

If AEP = Usually AL then ME = 25

If AEP = Equally AL and English then ME = 50

If AEP = usually English then ME = 75

If AEP = always English then ME = 100

1. **Correct HESP and HAEP to give more weight to the time spent with the Mother.**

**If Mother is the English-speaking parent (EP = 1):**

Corrected time with Mum = CHM = HESP\*4/3

Corrected time with Dad = CHF = HAEP\*2/3

**If Father is the English-speaking parent (EP = 2):**

Corrected time with Mum = CHM = HAEP\*4/3

Corrected time with Dad = CHF = HESP\*2/3

1. Assign a value (SM) from Most, to give more weight to the Mum. What is obtained corresponds to the percentage of the Mother’s input during the time when both parents are with the child.

**If Mother is the English-speaking parent (EP = 1):**

If Most = English-speaking parent then SM = 90

If Most = AL-speaking parent then SM = 50

If Most = Both then SM = 70

**If Father is the English-speaking parent (EP = 2):**

If Most = English-speaking parent then SM = 50

If Most = AL-speaking parent then SM = 90

If Most = Both then SM = 70

1. Calculate the number of hours per week with both parents together

$$TBP=7\left(24-S\right)-N-HESP-HAEP$$

1. Calculate the total number of hours of English exposure in a week (E) with the following formula

$E=min⁡(\frac{CHM\left(ME\right)}{100}+\frac{CHF\left(FE\right)}{100}+N+0.01\*TBP\*\frac{SM\left(ME\right)}{100}+0.01\*\frac{TBP\left(100-SM\right)\left(FE\right)}{100},7\*\left(24-S\right))$

With

$$\frac{CHM\left(ME\right)}{100}= English from mother when mother alone$$

$$\frac{CHF\left(FE\right)}{100}=English from father when father alone$$

$$0.01\*TBP\*\frac{SM\left(ME\right)}{100}=English from the mother when both parents together$$

$$0.01\*\frac{TBP\left(100-SM\right)\left(FE\right)}{100}=English from the father when both parents together$$

1. Calculate the percentage of exposure to English

$$P=\frac{E}{7\left(24-S\right)}$$