**Appendix**

**Table A1.** Full table of cross-lagged panel models [survey-weighted, imputed, unstandardised estimates (standard errors)] for spatial ability (5 and 7 years) and emotional dysregulation (5 and 7 years).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Model 1  | Model 2 | Model 3 |
| **Dysregulation (7y)** |  |  |  |
| Dysregulation (5y) | 0.63(0.01)\*\*\* | 0.59(0.01)\*\*\* | 0.59(0.01)\*\*\* |
| Spatial ability (5y) | -0.03(0.00)\*\*\* | -0.02(0.00)\*\*\* | -0.02(0.00)\*\*\* |
| Sex: Female  |  | -0.45(0.08)\*\*\* | -0.43(0.08)\*\*\* |
| England: Disadvantaged  |  | 0.16(0.11)  | 0.15(0.11)  |
| England: Ethnic  |  | 0.35(0.24)  | 0.32(0.24)  |
| N. Ireland: Advantaged  |  | -0.46(0.14)\*\* | -0.46(0.14)\*\* |
| N. Ireland: Disadvantaged  |  | -0.25(0.21)  | -0.25(0.21)  |
| Scotland: Advantaged  |  | -0.22(0.19)  | -0.20(0.19)  |
| Scotland: Disadvantaged  |  | -0.29(0.19)  | -0.28(0.19)  |
| Wales: Advantaged  |  | -0.27(0.15)  | -0.27(0.15)  |
| Wales: Disadvantaged  |  | 0.02(0.14)  | 0.02(0.14)  |
| Black / Black British  |  | -0.56(0.25)\* | -0.60(0.25)\* |
| Indian  |  | -0.74(0.29)\* | -0.79(0.29)\*\* |
| Mixed  |  | 0.04(0.22)  | 0.03(0.22)  |
| Other ethnic group  |  | -0.31(0.36)  | -0.38(0.36)  |
| Pakistani & Bangladeshi  |  | -0.20(0.26)  | -0.28(0.27)  |
| Family income |  | -0.21(0.03)\*\*\* | -0.20(0.04)\*\*\* |
| Maternal education  |  | -0.11(0.03)\*\* | -0.10(0.03)\*\* |
| Maternal psychological distress  |  | 0.08(0.01)\*\*\* | 0.08(0.01)\*\*\* |
| Mother’s emotional responsivity deficits |  | 0.03(0.06)  | 0.02(0.06)  |
| Verbal ability |  |  | -0.01(0.00)  |
| **Spatial ability (7y)** |  |  |  |
| Spatial ability (5y) | 0.54(0.01)\*\*\* | 0.51(0.01)\*\*\* | 0.49(0.01)\*\*\* |
| Dysregulation (5y) | -0.18(0.02)\*\*\* | -0.09(0.02)\*\*\* | -0.08(0.02)\*\*\* |
| Sex: Female  |  | -0.40(0.19)\* | -0.58(0.20)\*\* |
| England: Disadvantaged  |  | -0.69(0.28)\* | -0.64(0.28)\* |
| England: Ethnic  |  | -0.74(1.03)  | -0.43(1.04)  |
| N. Ireland: Advantaged  |  | 0.77(0.62)  | 0.80(0.62)  |
| N. Ireland: Disadvantaged  |  | 0.12(0.59)  | 0.14(0.60)  |
| Scotland: Advantaged  |  | 1.32(0.55)\* | 1.18(0.54)\* |
| Scotland: Disadvantaged  |  | -0.12(0.44)  | -0.25(0.44)  |
| Wales: Advantaged  |  | 0.69(0.73)  | 0.73(0.72)  |
| Wales: Disadvantaged  |  | 0.71(0.37)  | 0.73(0.37)  |
| Black / Black British |  | -3.59(1.39)\*\* | -3.16(1.41)\* |
| Indian  |  | -1.49(0.78)  | -1.01(0.79)  |
| Mixed  |  | -0.97(0.63)  | -0.86(0.63)  |
| Other ethnic group  |  | 0.33(0.75)  | 1.17(0.77)  |
| Pakistani & Bangladeshi  |  | -1.35(0.82)  | -0.52(0.84)  |
| Family income |  | 0.45(0.09)\*\*\* | 0.38(0.09)\*\*\* |
| Maternal education  |  | 0.54(0.08)\*\*\* | 0.46(0.08)\*\*\* |
| Maternal psychological distress  |  | -0.05(0.03)\* | -0.05(0.03)  |
| Mother’s emotional responsivity deficits  |  | -0.34(0.16)\* | -0.22(0.16)  |
| Verbal ability |  |  | 0.08(0.01)\*\*\* |
| **Dysregulation (5y)** |  |  |  |
| Sex: Female  |  | -0.69(0.09)\*\*\* | -0.59(0.09)\*\*\* |
| England: Disadvantaged  |  | 0.48(0.15)\*\* | 0.44(0.14)\*\* |
| England: Ethnic  |  | 0.22(0.35)  | 0.07(0.35)  |
| N. Ireland: Advantaged  |  | -0.72(0.26)\*\* | -0.73(0.26)\*\* |
| N. Ireland: Disadvantaged  |  | -0.34(0.21)  | -0.35(0.21)  |
| Scotland: Advantaged  |  | -0.23(0.21)  | -0.18(0.21)  |
| Scotland: Disadvantaged  |  | 0.22(0.26)  | 0.25(0.26)  |
| Wales: Advantaged  |  | -0.17(0.21)  | -0.19(0.21)  |
| Wales: Disadvantaged  |  | 0.37(0.23)  | 0.36(0.23)  |
| Black / Black British |  | -0.85(0.38)\* | -1.07(0.39)\*\* |
| Indian  |  | 0.14(0.41)  | -0.08(0.42)  |
| Mixed  |  | 0.04(0.30)  | -0.02(0.30)  |
| Other ethnic group  |  | -0.41(0.43)  | -0.80(0.44)  |
| Pakistani & Bangladeshi  |  | -0.15(0.41)  | -0.55(0.42)  |
| Family income |  | -0.48(0.04)\*\*\* | -0.43(0.05)\*\*\* |
| Maternal education  |  | -0.31(0.04)\*\*\* | -0.27(0.04)\*\*\* |
| Maternal psychological distress  |  | 0.25(0.01)\*\*\* | 0.25(0.01)\*\*\* |
| Mother’s emotional responsivity deficits  |  | 0.45(0.09)\*\*\* | 0.39(0.09)\*\*\* |
| Verbal ability |  |  | -0.03(0.00)\*\*\* |
| **Spatial ability (5y)** |  |  |  |
| Sex: Female  |  | 1.91(0.22)\*\*\* | 1.35(0.22)\*\*\* |
| England: Disadvantaged  |  | -1.18(0.47)\* | -0.98(0.47)\* |
| England: Ethnic  |  | -0.53(0.87)  | 0.28(0.88)  |
| N. Ireland: Advantaged  |  | 0.62(0.71)  | 0.65(0.71)  |
| N. Ireland: Disadvantaged  |  | 0.15(0.85)  | 0.19(0.85)  |
| Scotland: Advantaged  |  | -1.86(1.11)  | -2.16(1.11)  |
| Scotland: Disadvantaged  |  | -2.69(0.58)\*\*\* | -2.86(0.58)\*\*\* |
| Wales: Advantaged  |  | -0.30(0.75)  | -0.19(0.75)  |
| Wales: Disadvantaged  |  | -0.70(0.58)  | -0.61(0.58)  |
| Black / Black British |  | -3.62(1.74)\* | -2.39(1.73)  |
| Indian  |  | -0.64(0.77)  | 0.62(0.78)  |
| Mixed  |  | -1.09(0.75)  | -0.74(0.75)  |
| Other ethnic group  |  | -0.16(0.97)  | 1.97(0.94)\* |
| Pakistani & Bangladeshi  |  | -2.51(1.13)\* | -0.28(1.14)  |
| Family income |  | 0.72(0.09)\*\*\* | 0.49(0.09)\*\*\* |
| Maternal education  |  | 0.97(0.09)\*\*\* | 0.72(0.09)\*\*\* |
| Maternal psychological distress  |  | -0.06(0.03)  | -0.04(0.03)  |
| Mother’s emotional responsivity deficits  |  | -0.84(0.24)\*\*\* | -0.49(0.24)\* |
| Verbal ability |  |  | 0.19(0.01)\*\*\* |
| \*p<0.05, \*\*p<0.01, \*\*\*p<0.001 |Abbreviation: N. = Northern | For all models, there were $N = 13,378$ observations  |
|  |

**Table A2.** Full table for the CLPMs [survey-weighted, imputed, unstandardised estimates (standard errors)] for spatial ability (5 and 7 years) and emotional dysregulation (5 and 7 years), stratified by sex.

|  |  |  |
| --- | --- | --- |
|  | Males | Females |
| **Dysregulation (7y)** |  |  |
| Dysregulation (5y) | 0.60(0.01)\*\*\* | 0.55(0.01)\*\*\* |
| Spatial ability (5y) | -0.02(0.01)\*\*\* | -0.02(0.01)\*\*\* |
| England: Disadvantaged  | 0.20(0.14)  | 0.11(0.15)  |
| England: Ethnic  | -0.11(0.27)  | 0.70(0.36)  |
| N. Ireland: Advantaged  | -0.55(0.24)\* | -0.34(0.22)  |
| N. Ireland: Disadvantaged  | -0.19(0.29)  | -0.35(0.26)  |
| Scotland: Advantaged  | 0.06(0.26)  | -0.42(0.23)  |
| Scotland: Disadvantaged  | -0.45(0.28)  | -0.09(0.23)  |
| Wales: Advantaged  | -0.40(0.21)  | -0.21(0.24)  |
| Wales: Disadvantaged  | 0.17(0.18)  | -0.20(0.23)  |
| Black / Black British  | -0.79(0.37)\* | -0.30(0.40)  |
| Indian  | -0.06(0.39)  | -1.39(0.47)\*\* |
| Mixed  | 0.01(0.30)  | 0.06(0.34)  |
| Other ethnic group  | 0.29(0.51)  | -1.03(0.51)\* |
| Pakistani & Bangladeshi  | -0.22(0.36)  | -0.30(0.35)  |
| Family income | -0.22(0.05)\*\*\* | -0.21(0.05)\*\*\* |
| Maternal education  | -0.08(0.05)  | -0.12(0.05)\* |
| Maternal psychological distress  | 0.10(0.01)\*\*\* | 0.07(0.02)\*\*\* |
| Mother’s emotional responsivity deficits  | -0.04(0.09)  | 0.09(0.08)  |
| Verbal ability | -0.01(0.00)  | -0.00(0.01)  |
| **Spatial ability (7y)** |  |  |
| Spatial ability (5y) | 0.50(0.02)\*\*\* | 0.48(0.02)\*\*\* |
| Dysregulation (5y) | -0.06(0.03)\* | -0.10(0.03)\*\* |
| England: Disadvantaged  | -0.93(0.37)\* | -0.34(0.38)  |
| England: Ethnic  | -0.33(0.93)  | -0.30(1.42)  |
| N. Ireland: Advantaged  | 0.18(0.69)  | 1.32(0.91)  |
| N. Ireland: Disadvantaged  | -0.61(0.69)  | 1.07(0.76)  |
| Scotland: Advantaged  | 0.52(0.57)  | 1.97(0.79)\* |
| Scotland: Disadvantaged  | -1.40(0.62)\* | 1.00(0.59)  |
| Wales: Advantaged  | 0.36(0.68)  | 1.03(0.98)  |
| Wales: Disadvantaged  | -0.26(0.53)  | 1.60(0.50)\*\* |
| Black / Black British | -3.61(1.69)\* | -2.84(1.58)  |
| Indian  | -1.10(0.96)  | -0.83(1.24)  |
| Mixed  | -0.01(0.94)  | -1.51(0.87)  |
| Other ethnic group  | 0.10(1.26)  | 2.40(1.19)\* |
| Pakistani & Bangladeshi  | -0.47(0.87)  | -0.57(1.18)  |
| Family income | 0.35(0.12)\*\* | 0.39(0.11)\*\*\* |
| Maternal education  | 0.39(0.11)\*\*\* | 0.57(0.11)\*\*\* |
| Maternal psychological distress  | -0.02(0.04)  | -0.08(0.04)\* |
| Mother’s emotional responsivity deficits  | -0.36(0.21)  | -0.09(0.22)  |
| Verbal ability | 0.07(0.01)\*\*\* | 0.08(0.01)\*\*\* |
| **Dysregulation (5y)** |  |  |
| England: Disadvantaged  | 0.52(0.18)\*\* | 0.35(0.19)  |
| England: Ethnic  | 0.13(0.38)  | 0.00(0.43)  |
| N. Ireland: Advantaged  | -0.63(0.30)\* | -0.83(0.42)  |
| N. Ireland: Disadvantaged  | -0.39(0.27)  | -0.32(0.26)  |
| Scotland: Advantaged  | -0.28(0.27)  | -0.08(0.28)  |
| Scotland: Disadvantaged  | 0.57(0.33)  | -0.09(0.30)  |
| Wales: Advantaged  | 0.08(0.27)  | -0.48(0.30)  |
| Wales: Disadvantaged  | 0.71(0.26)\*\* | -0.04(0.31)  |
| Black / Black British | -1.16(0.53)\* | -1.02(0.49)\* |
| Indian  | -0.45(0.43)  | 0.28(0.63)  |
| Mixed  | 0.18(0.41)  | -0.22(0.41)  |
| Other ethnic group  | -1.46(0.59)\* | -0.21(0.57)  |
| Pakistani & Bangladeshi  | -0.58(0.51)  | -0.48(0.54)  |
| Family income | -0.40(0.06)\*\*\* | -0.48(0.07)\*\*\* |
| Maternal education  | -0.24(0.06)\*\*\* | -0.28(0.06)\*\*\* |
| Maternal psychological distress  | 0.28(0.02)\*\*\* | 0.23(0.02)\*\*\* |
| Mother’s emotional responsivity deficits  | 0.35(0.12)\*\* | 0.43(0.12)\*\*\* |
| Verbal ability | -0.04(0.01)\*\*\* | -0.03(0.01)\*\*\* |
| **Spatial ability (5y)** |  |  |
| England: Disadvantaged  | -0.95(0.57)  | -1.01(0.52)  |
| England: Ethnic  | -0.33(1.07)  | 0.80(1.02)  |
| N. Ireland: Advantaged  | 0.65(0.85)  | 0.65(0.76)  |
| N. Ireland: Disadvantaged  | 0.33(0.89)  | 0.07(1.19)  |
| Scotland: Advantaged  | -1.91(1.08)  | -2.42(1.28)  |
| Scotland: Disadvantaged  | -3.14(0.80)\*\*\* | -2.63(0.66)\*\*\* |
| Wales: Advantaged  | -0.37(0.72)  | 0.05(0.93)  |
| Wales: Disadvantaged  | 0.49(0.61)  | -1.78(0.77)\* |
| Black / Black British | -2.50(1.78)  | -2.15(1.92)  |
| Indian  | 2.03(1.08)  | -0.76(0.98)  |
| Mixed  | -1.15(1.18)  | -0.39(0.87)  |
| Other ethnic group  | 2.82(1.69)  | 1.24(0.98)  |
| Pakistani & Bangladeshi  | -0.35(1.47)  | -0.23(1.25)  |
| Family income | 0.56(0.13)\*\*\* | 0.44(0.12)\*\*\* |
| Maternal education  | 0.84(0.12)\*\*\* | 0.59(0.13)\*\*\* |
| Maternal psychological distress  | -0.05(0.04)  | -0.03(0.04)  |
| Mother’s emotional responsivity deficits  | -0.52(0.28)  | -0.43(0.32)  |
| Verbal ability | 0.21(0.01)\*\*\* | 0.18(0.01)\*\*\* |

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001 |Abbreviation: N. = Northern | For males, there were $N\_{m}= 6,828$ observations; for females, there were $N\_{f}= 6,550$ observations