**Table S2: Model fitting results for the Independent Pathway Models using parent-report data for callous-unemotional traits, social interaction and social communication difficulties.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **Number of parameters** | **Δ parameters (relative to full model)** | **-2\*log-likelihood** | **Δ likelihood – χ2 value (relative to full model)** | **p-value** |
| IP full ACE | 21  | - | 96520.10 | - | - |
| M1a | 18 | 3 | 96524.70 | 4.69 | .20 |
| M2b | 15 | 6 | 96547.83 | 27.83 | .001 |
| M3c | **16** | **5** | **96527.22** | **7.22** | **.20** |
| M4d | 14 | 7 | 96599.15 | 79.15 | .001 |
| M5d | 15 | 6 | 96548.41 | 28.41 | .001 |

Abbreviations: IP full ACE = an Independent Pathway ACE model containing path estimates for additive genetic, shared environmental and non-shared environmental influences acting on each trait separately (specific path estimates), and acting on all three traits (common path estimates, quantifying overlapping etiological influences).

a In model M1, common shared environment paths were dropped. Model M1 provided a better fit to the data than the full IPM.

b In model M2, common and unique shared environment paths were dropped. Model M2 fitted worse compared to the full IPM.

c To define more closely the potential source of significant unique shared environmental influences acting on either of the variables explaining the drop in fit for M2, sub-model M3, in which common and specific C paths for callous-unemotional and social interaction only were dropped. M3 was the best fitting model (χ2=7.22, p=0.20).

d The remaining 2 sub-models, M4 and M5, were fitted to test whether dropping common non-shared environment paths for callous-unemotional and social interaction (M4); or dropping common non-shared environmental paths for callous-unemotional only (M5) improved. However, both models fitted worse, so these paths could not be taken out.