**Data dictionary extract for items used in current analysis**

|  |  |  |
| --- | --- | --- |
| **Questionnaire** | **Variable label** | **Content** |
| **Age 3 variables** | | |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | bmsdfs | Constantly fidgeting or squirming |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | bmsddc | Easily distracted |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | bmsdro | Restless, overactive, cannot stay still long |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | bmsdst | Can stop and think before acting |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | bmsdte | CM sees tasks through to the end |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | bmsdcs | CM steals from home, school, elsewhere |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | bmsdfb | CM fights with or bullies other children |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | bmsdoa | CM often lies or cheats |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | bmsdor | CM is generally obedient |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | bmsdtt | CM often has temper tantrums |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | bmsdfe | CM has many fears, is easily scared |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | bmsdhs | CM often complains of headaches/sickness |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | bmsdmw | CM has many worries, often seems worried |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | bmsdnc | CM nervous/clingy in new situations |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | bmsdud | CM often unhappy,downhearted, tearful |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | bmsems | CM shows wide mood swings |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | bmseoe | CM gets over excited |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | bmseef | CM is easily frustrated |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | bmseuq | CM quickly gets over being upset |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | bmseia | CM is impulsive and acts without thinking |
| **Age 5 variables** | | |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | cmsems | CM shows wide mood swings |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | cmseoe | CM gets over excited |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | cmseef | CM is easily frustrated |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | cmseuq | CM quickly gets over being upset |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | cmseia | CM is impulsive and acts without thinking |
| **Age 7 variables** | | |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | dmsdfs | Constantly fidgeting or squirming |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | dmsddc | Easily distracted |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | dmsdro | Restless, overactive, cannot stay still long |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | dmsdst | Can stop and think before acting |
| Strengths and Difficulties Questionnaire (SDQ) – ADHD symptoms | dmsdte | CM sees tasks through to the end |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | dmsdcs | CM steals from home, school, elsewhere |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | dmsdfb | CM fights with or bullies other children |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | dmsdoa | CM often lies or cheats |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | dmsdor | CM is generally obedient |
| Strengths and Difficulties Questionnaire (SDQ) – Conduct problems | dmsdtt | CM often has temper tantrums |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | dmsdfe | CM has many fears, is easily scared |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | dmsdhs | CM often complains of headaches/sickness |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | dmsdmw | CM has many worries, often seems worried |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | dmsdnc | CM nervous/clingy in new situations |
| Strengths and Difficulties Questionnaire (SDQ) – Internalising problems | dmsdud | CM often unhappy,downhearted, tearful |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | dmsems | CM shows wide mood swings |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | dmseoe | CM gets over excited |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | dmseef | CM is easily frustated |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | dmseuq | CM quickly gets over being upset |
| Child Self Regulation - Child Social Behaviour Questionnaire - Emotional dysregulation | dmseia | CM is impulsive and acts without thinking |

**Table S1: Fit statistics for the CSBQ developmental invariance analyses based on scaled difference test**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** |  | **df** | ***p*** | **𝚫** | ***p*** |
| **Configural** | 1203.625 | 154 | <.001\* | - | - |
| **Metric** | 1094.763 | 174 | <.001\* | 97.167 | <.001\* |
| **Metric R1: remove loading constraint on item 3 at age 3 in males** | 1053.265 | 173 | <.001\* | 72.785 | <.001\* |
| **Metric R2: remove loading constraint on item 1 at age 5 in males** | 1036.299 | 172 | <.001\* | 62.130 | <.001\* |
| **Metric R3: remove loading constraint on item 1 at age 7 in males** | 1013.398 | 171 | <.001\* | 47.654 | <.001\* |
| **Metric R4: remove loading constraint on item 4 at age 5 in males** | 1014.220 | 170 | <.001\* | 38.134 | .0014\* |
| **Metric R5: remove loading constraint on item 4 at age 3 in females** | 1040.763 | 169 | <.001\* | 33.385 | .0042\* |
| **Metric R6: remove loading constraint on item 5 at age 3 in males** | 1029.458 | 168 | <.001\* | 25.889 | .0267\* |
| **Metric R7: remove loading constraint on item 3 at age 7 in males** | 1018.788 | 167 | <.001\* | 18.626 | .1352 |
| **Scalar** | 1158.159 | 172 | <.001\* | 177.975 | <.001\* |
| **Scalar R1: remove threshold 2 constraint on item 2 at age 3 in females** | 1094.603 | 171 | <.001\* | 98.675 | <.001\* |
| **Scalar R2: remove threshold 2 constraint on item 2 at age 3 in males** | 1041.152 | 170 | <.001\* | 32.479 | <.001\* |
| **Scalar R3: remove threshold 2 constraint on item 2 at age 7 in males** | 1017.673 | 169 | <.001\* | 1.162 | .5593 |

*Note.* R=revised, denoting that a constraint has been freed.

**Table S2: Fit statistics for the CSBQ developmental invariance analyses based on CFI, RMSEA and SRMR**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** |  | **df** | ***p*** | **CFI** | **RMSEA** | **SRMR** | **𝚫** | ***P*** | **𝚫CFI** | **𝚫RMSEA** | **𝚫SRMR** |
| **Configural** | 1203.625 | 154 | <.001 | 0.982 | 0.031 | 0.030 | - | - | - | - | - |
| **Metric** | 1094.763 | 174 | <.001 | 0.985 | 0.027 | 0.032 | 97.167 | <.001 | 0.003 | -0.004 | 0.002 |
| **Scalar** | 1461.086 | 194 | <.001 | 0.979 | 0.030 | 0.034 | 74.97 | <.001 | -0.006 | 0.003 | 0.002 |

*Note.* Judgements of invariance are based on the criteria of (Chen, 2007)

**Table S3: Emotion dysregulation intercept and slope effects on mental health and neurodevelopmental outcomes at age 7 using partial measurement invariance model**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Intercept effect** | | | **Linear slope effect** | | |
| **Outcome** | **B** | **SE** | ***P*** | **B** | **SE** | ***p*** |
| **Females** |  |  |  |  |  |  |
| ADHD  symptoms | 0.293 | 0.014 | <.001 | 1.487 | 0.144 | <.001 |
| Internalising symptoms | 0.194 | 0.013 | <.001 | 0.878 | 0.106 | <.001 |
| Conduct problems symptoms | 0.249 | 0.016 | <.001 | 1.395 | 0.144 | <.001 |
| **Males** | | | | | | |
| ADHD  Symptoms | 0.302 | 0.017 | <.001 | 1.630 | 0.178 | <.001 |
| Internalising symptoms | 0.197 | 0.017 | <.001 | 1.347 | 0.183 | <.001 |
| Conduct problems symptoms | 0.260 | 0.019 | <.001 | 1.668 | 0.208 | <.001 |

*Note.* SE = standard error. Model used unconstrained estimation despite the presence of a Heywood case (negative residual variance for conduct problems). This model uses a partial scalar measurement invariance model for emotion dysregulation and an oblique factor model for the outcomes. It includes no adjustment for baseline mental health and neurodevelopmental symptoms. Full model is available at: https://osf.io/43z8k

**Table S4: Emotion dysregulation intercept and slope effects on mental health and neurodevelopmental outcomes at age 7 using full measurement invariance model**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Intercept effect** | | | **Linear slope effect** | | |
| **Females** | | | | | | |
| **Outcome** | **B** | **SE** | ***P*** | **B** | **SE** | ***p*** |
| ADHD  symptoms | 0.291 | 0.014 | <.001 | 1.462 | 0.140 | <.001 |
| Internalising symptoms | 0.193 | 0.013 | <.001 | 0.861 | 0.103 | <.001 |
| Conduct problems symptoms | 0.247 | 0.016 | <.001 | 1.370 | 0.141 | <.001 |
| **Males** | | | | | | |
| ADHD  Symptoms | 0.274 | 0.013 | <.001 | 1.452 | 0.013 | <.001 |
| Internalising symptoms | 0.178 | 0.015 | <.001 | 1.184 | 0.122 | <.001 |
| Conduct problems symptoms | 0.236 | 0.016 | <.001 | 1.473 | 0.133 | <.001 |

*Note.* SE = standard error. Model used unconstrained estimation despite the presence of a Heywood case. This model uses a full scalar measurement invariance model for emotion dysregulation and an oblique factor model for the outcomes. It includes no adjustment for baseline mental health and neurodevelopmental symptoms. Full model is available at: <https://osf.io/wvug>