Supplementary Table S1: Summary of data analysis procedure

|  |  |  |  |
| --- | --- | --- | --- |
| Research question | Independent variable | Dependent variable | Covariates |
| 1a. Is exposure to multiple forms of victimisation in childhood associated with loneliness in childhood in a dose-response manner? | Age 5-12 polyvictimisation | Age 12 loneliness | n/a |
| 1b. Is exposure to multiple forms of victimisation in adolescence associated with loneliness in young adulthood in a dose-response manner? | Age 12-18 polyvictimisation | Age 18 loneliness | n/a |
| 1c. Is exposure to multiple forms of victimisation in childhood associated with loneliness in young adulthood in a dose-response manner? | Age 5-12 polyvictimisation | Age 18 loneliness | n/a |
| 2. Are individual types of victimisation in childhood associated with loneliness in childhood? (And is this association explained by concurrent psychopathology?) | Age 5-12 victimisation | Age 12 loneliness | Age 12 depression & anxiety |
| 3. Is loneliness in childhood associated with higher risk of victimisation in adolescence? | Age 12 loneliness | Age 12-18 victimisation | n/a |
| 4. Are individual types of victimisation in adolescence associated with loneliness in young adulthood? (And is this explained by prior loneliness or victimisation, or by concurrent psychopathology?) | Age 12-18 victimisation | Age 18 loneliness | Age 12 loneliness Age 5-12 victimisation Age 18 depression & anxiety |
| 5. Are individual types of victimisation in childhood associated with loneliness in young adulthood? (And is this explained by the victimisation being ongoing, or by concurrent psychopathology?) | Age 5-12 victimisation | Age 18 loneliness | Age 12-18 victimisation Age 18 depression & anxiety |
| 6a. Post-hoc analysis: Is the association between bullying and loneliness in childhood explained by social isolation? | Age 5-12 bullying | Age 12 loneliness | Age 5-12 social isolation |
| 6b. Post-hoc analysis is the association between cybervictimisation in adolescence and loneliness in young adulthood explained by problematic technology use? | Age 12-18 cybervictimisation | Age 18 loneliness | Age 18 problematic technology use |

Supplementary Table S2: Within-twin pair crosstabulations of childhood victimisation. Shaded cells contain concordant twin pairs; unshaded cells contain discordant pairs.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Twin 2 | | | | | |
|  |  |  | Whole sample | | | MZ Twins only | | |
|  |  |  | None | Minor/  moderate/  occasional | Severe/  frequent | None | Minor/  moderate/  occasional | Severe/  frequent |
| Twin 1 | Physical/sexual abuse | None | 832 | 37 | 5 | 476 | 19 | 1 |
|  | Minor | 54 | 114 | 11 | 26 | 64 | 6 |
|  | Severe | 12 | 10 | 41 | 6 | 3 | 20 |
| Physical neglect | None | 1011 | 3 | 1 | 567 | 1 | 0 |
|  | Minor | 3 | 76 | 0 | 1 | 41 | 0 |
|  | Severe | 1 | 0 | 21 | 0 | 0 | 11 |
| Emotional abuse/neglect | None | 970 | 10 | 1 | 551 | 3 | 1 |
|  | Moderate | 15 | 83 | 2 | 4 | 44 | 1 |
|  | Severe | 3 | 2 | 30 | 1 | 0 | 16 |
| Bullying victimisation | None | 456 | 153 | 20 | 272 | 69 | 6 |
|  | Occasional | 121 | 219 | 39 | 56 | 140 | 17 |
|  | Frequent | 23 | 37 | 39 | 6 | 24 | 23 |

Supplementary Table S3: Within-twin pair crosstabulations of adolescent victimisation. Shaded cells contain concordant twin pairs; unshaded cells contain discordant pairs.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Twin 2 | | | | | |
|  |  |  | Whole sample | | | MZ twins only | | |
|  |  |  | None | Moderate | Severe | None | Moderate | Severe |
| Twin 1 | Maltreatment | None | 795 | 78 | 12 | 461 | 33 | 5 |
|  | Moderate | 71 | 25 | 5 | 36 | 18 | 3 |
|  | Severe | 14 | 6 | 14 | 5 | 4 | 12 |
| Neglect | None | 919 | 25 | 14 | 523 | 11 | 6 |
|  | Moderate | 25 | 10 | 2 | 13 | 6 | 2 |
|  | Severe | 11 | 7 | 6 | 7 | 5 | 4 |
| Sexual victimisation | None | 808 | 71 | 19 | 468 | 33 | 10 |
|  | Moderate | 69 | 21 | 7 | 37 | 11 | 5 |
|  | Severe | 13 | 4 | 4 | 6 | 2 | 3 |
| Family victimisation | None | 727 | 33 | 65 | 414 | 17 | 34 |
|  | Moderate | 40 | 17 | 16 | 24 | 9 | 8 |
|  | Severe | 64 | 12 | 45 | 33 | 9 | 29 |
| Peer victimisation | None | 252 | 134 | 38 | 148 | 70 | 14 |
|  | Moderate | 153 | 217 | 69 | 83 | 138 | 39 |
|  | Severe | 36 | 68 | 54 | 17 | 36 | 33 |
| Crime victimisation | None | 322 | 134 | 45 | 198 | 53 | 25 |
|  | Moderate | 127 | 130 | 63 | 76 | 78 | 35 |
|  | Severe | 46 | 72 | 83 | 23 | 39 | 51 |
| Internet victimisation | None | 683 | 91 | 28 | 384 | 46 | 15 |
|  | Moderate | 94 | 36 | 16 | 61 | 27 | 7 |
|  | Severe | 47 | 11 | 14 | 22 | 7 | 8 |