**Supplement 1**

|  |
| --- |
| The characteristics of each grade |
|  |  |  | grade |  |  |
|  |  |  | 5 | 8 | 11 | Total |
| 　 | 　 | 　 | N | % | N | % | N | % | N | % |
| Child sex |  | Boy | 1283 | 46.1 | 1369 | 45.1 | 1687 | 47.3 | 4339 | 46.2 |
|  |  | Girl | 1492 | 53.6 | 1544 | 50.8 | 1833 | 51.4 | 4869 | 51.9 |
|  |  | Missing | 9 | 0.3 | 125 | 4.1 | 48 | 1.3 | 182 | 1.9 |
| Maternal age |  | <35y | 228 | 8.2 | 55 | 1.8 | 7 | 0.2 | 290 | 3.1 |
|  |  | 35y-<40y | 692 | 24.9 | 456 | 15 | 234 | 6.6 | 1382 | 14.7 |
|  |  | 40y-<45y | 1069 | 38.4 | 1170 | 38.5 | 1082 | 30.3 | 3321 | 35.4 |
|  |  | 45y-<50y | 606 | 21.8 | 936 | 30.8 | 1357 | 38 | 2899 | 30.9 |
|  |  | 50y+ | 104 | 3.7 | 324 | 10.7 | 778 | 21.8 | 1206 | 12.8 |
|  |  | Missing | 85 | 3.1 | 97 | 3.2 | 110 | 3.1 | 292 | 3.1 |
| Having older sibling |  | No | 1375 | 49.4 | 1660 | 54.6 | 2267 | 63.5 | 5302 | 56.5 |
|  |  | Yes | 1409 | 50.6 | 1378 | 45.4 | 1301 | 36.5 | 4088 | 43.5 |
| Having younger sibling | No | 1425 | 51.2 | 1535 | 50.5 | 1752 | 49.1 | 4712 | 50.2 |
|  |  | Yes | 1359 | 48.8 | 1505 | 49.8 | 1816 | 50.9 | 4678 | 48.2 |
| Maternal economic difficulties in childhood | No | 2314 | 83.1 | 2500 | 82.3 | 2839 | 79.6 | 7653 | 81.5 |
|  |  | Yes | 470 | 16.9 | 538 | 17.7 | 729 | 20.4 | 1737 | 18.5 |
| Maternal education |  | High school or less | 944 | 33.9 | 1099 | 36.2 | 1495 | 41.9 | 3538 | 37.7 |
|  |  | Some college | 1274 | 45.8 | 1363 | 44.9 | 1567 | 43.9 | 4204 | 44.8 |
|  |  | College or more | 467 | 16.8 | 464 | 15.3 | 374 | 10.5 | 1305 | 13.9 |
|  |  | Other/Unknown | 17 | 0.6 | 6 | 0.2 | 18 | 0.5 | 41 | 0.4 |
|  |  | Missing | 82 | 2.9 | 106 | 3.5 | 114 | 3.2 | 302 | 3.2 |
| Psychological distress |  | <5 | 1924 | 69.1 | 2066 | 68 | 2460 | 68.9 | 6450 | 68.7 |
|  |  | 5-<13 | 643 | 23.1 | 737 | 24.3 | 785 | 22 | 2165 | 23.1 |
|  |  | 13+ | 149 | 5.4 | 161 | 5.3 | 162 | 4.5 | 472 | 5 |
|  |  | Missing | 68 | 2.4 | 74 | 2.4 | 161 | 4.5 | 303 | 3.2 |
| Maternal BMI |  | <18.8 | 354 | 12.7 | 363 | 11.9 | 375 | 10.5 | 1092 | 11.6 |
|  |  | 18.5-<25.0 | 1883 | 67.6 | 2042 | 67.2 | 2329 | 65.3 | 6254 | 66.6 |
|  |  | 25.0-30.0 | 225 | 8.1 | 303 | 10 | 450 | 12.6 | 978 | 10.4 |
|  |  | 30.0+ | 61 | 2.2 | 63 | 2.1 | 89 | 2.5 | 213 | 2.3 |
|  |  | Missing | 261 | 9.4 | 267 | 8.8 | 325 | 9.1 | 853 | 9.1 |
| Maternal history of smoking | Never | 1849 | 66.4 | 2045 | 67.3 | 2377 | 66.6 | 6271 | 66.8 |
|  |  | Used to smoke | 454 | 16.3 | 479 | 15.8 | 495 | 13.9 | 1428 | 15.2 |
|  |  | Current smoking | 406 | 14.6 | 437 | 14.4 | 575 | 16.1 | 1418 | 15.1 |
|  |  | Missing | 75 | 2.7 | 77 | 2.5 | 121 | 3.4 | 273 | 2.9 |
| Household income (yen) | <3 million | 492 | 17.7 | 573 | 18.9 | 718 | 20.1 | 1783 | 19 |
|  |  | 3 million-<6 million | 949 | 34.1 | 953 | 31.4 | 1042 | 29.2 | 2944 | 31.4 |
|  |  | 6 million+ | 871 | 31.3 | 958 | 31.5 | 972 | 27.2 | 2801 | 29.8 |
|  |  | Unknown | 115 | 4.1 | 133 | 4.4 | 161 | 4.5 | 409 | 4.4 |
|  |  | Missing | 357 | 12.8 | 421 | 13.9 | 675 | 18.9 | 1453 | 15.5 |
| Lacking basic necessities | No | 1688 | 60.6 | 1923 | 63.3 | 2096 | 58.7 | 5707 | 60.8 |
|  |  | Yes | 562 | 20.2 | 537 | 17.7 | 783 | 21.9 | 1882 | 20 |
|  |  | Missing | 534 | 19.2 | 578 | 19 | 689 | 19.3 | 1801 | 19.2 |
| Lacking payment capacity | No | 2334 | 83.8 | 2538 | 83.5 | 2919 | 81.8 | 7791 | 83 |
|  |  | Yes | 390 | 14 | 411 | 13.5 | 534 | 15 | 1335 | 14.2 |
|  |  | Missing | 60 | 2.2 | 89 | 2.9 | 115 | 3.2 | 264 | 2.8 |
| Frequency of talking about school life | Frequently | 699 | 25.1 | 889 | 29.3 | 1095 | 30.7 | 2683 | 28.6 |
|  |  | Sometimes | 1657 | 59.5 | 1790 | 58.9 | 1980 | 55.5 | 5427 | 57.8 |
|  |  | Not very often | 311 | 11.2 | 300 | 9.9 | 293 | 8.2 | 904 | 9.6 |
|  |  | Never | 56 | 2 | 17 | 0.6 | 28 | 0.8 | 101 | 1.1 |
|  |  | Missing | 61 | 2.2 | 42 | 1.4 | 172 | 4.8 | 275 | 2.9 |
| Frequency of cooking for child | Almost everyday | 2401 | 86.2 | 2587 | 85.2 | 2753 | 77.2 | 7741 | 82.4 |
|  |  | 4-5 times/week | 103 | 3.7 | 122 | 4 | 148 | 4.1 | 373 | 4 |
|  |  | 2-3 times/week | 61 | 2.2 | 53 | 1.7 | 83 | 2.3 | 197 | 2.1 |
|  |  | A few days/month | 119 | 4.3 | 121 | 4 | 173 | 4.8 | 413 | 4.4 |
|  |  | Rarely | 38 | 1.4 | 107 | 3.5 | 222 | 6.2 | 367 | 3.9 |
|  |  | Missing | 62 | 2.2 | 48 | 1.6 | 189 | 5.3 | 299 | 3.2 |
| Frequency of having breakfast (child) | Everyday | 2529 | 90.8 | 2657 | 87.5 | 2904 | 81.4 | 8090 | 86.2 |
|  |  | More of having | 131 | 4.7 | 174 | 5.7 | 246 | 6.9 | 551 | 5.9 |
|  |  | Less of having | 71 | 2.6 | 113 | 3.7 | 215 | 6 | 399 | 4.2 |
|  |  | Never | 25 | 0.9 | 58 | 1.9 | 177 | 5 | 260 | 2.8 |
|  |  | Missing | 28 | 1 | 36 | 1.2 | 26 | 0.7 | 90 | 1 |
| Frequency of eating vegetables (child) | Everyday | 1917 | 68.9 | 2212 | 72.8 | 2487 | 69.7 | 6616 | 70.5 |
|  |  | 4-5 times/week | 459 | 16.5 | 460 | 15.1 | 603 | 16.9 | 1522 | 16.2 |
|  |  | 2-3 times/week | 285 | 10.2 | 240 | 7.9 | 315 | 8.8 | 840 | 8.9 |
|  |  | Less than 1 time/month | 54 | 1.9 | 43 | 1.4 | 83 | 2.3 | 180 | 1.9 |
|  |  | Never | 27 | 1 | 28 | 0.9 | 36 | 1 | 91 | 1 |
|  |  | Missing | 42 | 1.5 | 55 | 1.8 | 44 | 1.2 | 141 | 1.5 |
| Hit the child's body |  | No | 2639 | 94.8 | 2902 | 95.5 | 3365 | 94.3 | 8906 | 94.8 |
|  |  | Yes | 79 | 2.8 | 37 | 1.2 | 23 | 0.6 | 139 | 1.5 |
|  |  | Missing | 66 | 2.4 | 99 | 3.3 | 180 | 5 | 345 | 3.7 |
| Beat the child |  | No | 2629 | 94.4 | 2874 | 94.6 | 3349 | 93.9 | 8852 | 94.3 |
|  |  | Yes | 96 | 3.4 | 69 | 2.3 | 47 | 1.3 | 212 | 2.3 |
|  |  | Missing | 59 | 2.1 | 95 | 3.1 | 172 | 4.8 | 326 | 3.5 |
| Shut the child outside |  | No | 2513 | 90.3 | 2854 | 93.9 | 3342 | 93.7 | 8709 | 92.7 |
|  |  | Yes | 210 | 7.5 | 89 | 2.9 | 61 | 1.7 | 360 | 3.8 |
|  |  | Missing | 61 | 2.2 | 95 | 3.1 | 165 | 4.6 | 321 | 3.4 |
| Do not feed the child |  | No | 2711 | 97.4 | 2910 | 95.8 | 3373 | 94.5 | 8994 | 95.8 |
|  |  | Yes | 14 | 0.5 | 32 | 1.1 | 26 | 0.7 | 72 | 0.8 |
|  |  | Missing | 59 | 2.1 | 96 | 3.2 | 169 | 4.7 | 324 | 3.5 |
| Yell at the child |  | No | 2225 | 79.9 | 2683 | 88.3 | 3218 | 90.2 | 8126 | 86.5 |
|  |  | Yes | 489 | 17.6 | 256 | 8.4 | 173 | 4.8 | 918 | 9.8 |
|  |  | Missing | 70 | 2.5 | 99 | 3.3 | 177 | 5 | 346 | 3.7 |
| Insult the child repeatedly | No | 2638 | 94.8 | 2842 | 93.5 | 3328 | 93.3 | 8808 | 93.8 |
|  |  | Yes | 75 | 2.7 | 86 | 2.8 | 66 | 1.8 | 227 | 2.4 |
|  |  | Missing | 71 | 2.6 | 110 | 3.6 | 174 | 4.9 | 355 | 3.8 |
| Have a big fight in front of the child | No | 2599 | 93.4 | 2816 | 92.7 | 3266 | 91.5 | 8681 | 92.4 |
|  |  | Yes | 110 | 4 | 116 | 3.8 | 119 | 3.3 | 345 | 3.7 |
|  |  | Missing | 75 | 2.7 | 106 | 3.5 | 183 | 5.1 | 364 | 3.9 |
| Physical abuse from parents | No | 2558 | 91.9 | 2842 | 93.5 | 3319 | 93 | 8719 | 92.9 |
|  |  | Yes | 156 | 5.6 | 94 | 3.1 | 63 | 1.8 | 313 | 3.3 |
|  |  | Missing | 70 | 2.5 | 102 | 3.4 | 186 | 5.2 | 358 | 3.8 |
| Neglect from parents |  | No | 2506 | 90 | 2827 | 93.1 | 3319 | 93 | 8652 | 92.1 |
|  |  | Yes | 216 | 7.8 | 111 | 3.7 | 79 | 2.2 | 406 | 4.3 |
|  |  | Missing | 62 | 2.2 | 100 | 3.3 | 170 | 4.8 | 332 | 3.5 |
| Psychological abuse from parents | No | 2126 | 76.4 | 2550 | 83.9 | 3075 | 86.2 | 7751 | 82.5 |
|  |  | Yes | 565 | 20.3 | 361 | 11.9 | 298 | 8.4 | 1224 | 13 |
| 　 | 　 | Missing | 93 | 3.3 | 127 | 4.2 | 195 | 5.5 | 415 | 4.4 |
| Marital status |  | Married | 2391 | 85.9 | 2516 | 82.8 | 2867 | 80.4 | 7774 | 82.8 |
|  |  | Unmarried | 30 | 1.1 | 20 | 0.7 | 18 | 0.5 | 68 | 0.7 |
|  |  | Divorced | 339 | 12.2 | 454 | 14.9 | 611 | 17.1 | 1404 | 14.9 |
|  |  | Widowed | 16 | 0.6 | 41 | 1.4 | 54 | 1.5 | 111 | 1.2 |
|  |  | Missing | 8 | 0.3 | 7 | 0.2 | 18 | 0.5 | 33 | 0.4 |

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| --- |
| The impact of maternal ACEs on child behavioral problems stratified by grades  |
|  |  | Total | Grade 5 | Grade 8 | Grade 11 |
|  |  | n=9,390 | n=2,784 | n=3,038 | n=3,568 |
| 　 | 　 | β (95% CI) | β (95% CI) | β (95% CI) | β (95% CI) |
| ACE total score (0-6) | 0 | Ref  | Ref  | Ref  | Ref  |
|  | 1 | 0.79 (0.51-1.06) | 0.93 (0.40-1.47) | 0.56 (0.06-1.05) | 0.80 (0.40-1.21) |
|  | 2+ | 1.61 (1.21-2.01) | 1.93 (1.20-2.66) | 1.71 (0.93-2.49) | 1.08 (0.53-1.64) |
| Note. All analyses adjusted child sex, maternal age, having older and younger siblings, maternal economic difficulties in childhood, maternal education, and all 34 municipalities in Kochi prefecture. |

**Supplement 2**

**Supplement 3**

|  |  |  |  |
| --- | --- | --- | --- |
| Results of ordered logistic regression analysis (SDQ categories: Normal=7,836(83.5%); Borderline=757 (8.1%): Abnormal=797 (8.5%)) | 　 | 　 | 　 |
|  |  | Crude model | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|  |  | n=9,390 | n=9,390 | n=9,390 | n=9,390 | n=9,390 | n=9,390 |
| 　 | 　 | OR (95% CI) | OR (95% CI) | OR (95%CI) | OR (95%CI) | OR (95%CI) | OR (95%CI) |
| ACE total score (0-6) | 0 | Ref  | Ref  | Ref  | Ref  | Ref  | Ref  |
|  | 1 | 1.52 (1.33-1.75) | 1.42 (1.23-1.64) | 1.26 (1.09-1.47) | 1.24 (1.07-1.44) | 1.19 (1.02-1.39) | 1.19 (1.02-1.39) |
|  | 2+ | 1.96 (1.65-2.32) | 1.69 (1.41-2.03) | 1.24 (1.02-1.50) | 1.18 (0.97-1.43) | 1.07 (0.87-1.30) | 1.06 (0.87-1.30) |
| **Basic demographics** |  |  |  |  |  |  |  |
| Child sex | Boy | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Girl | 0.76 (0.67-0.85) | 0.74 (0.66-0.83) | 0.74 (0.65-0.83) | 0.73 (0.65-0.82) | 0.77 (0.68-0.87) | 0.77 (0.68-0.87) |
| Grade | 5th | Ref | Ref | Ref | Ref | Ref | Ref |
|  | 8th | 0.86 (0.75-0.99) | 0.87 (0.75-1.00) | 0.84 (0.72-0.97) | 0.83 (0.72-0.96) | 0.95 (0.81-1.11) | 0.94 (0.81-1.10) |
|  | 11th | 0.58 (0.50-0.66) | 0.57 (0.49-0.67) | 0.54 (0.46-0.64) | 0.52 (0.44-0.62) | 0.61 (0.51-0.72) | 0.61 (0.51-0.72) |
| Maternal age | <35y | 1.96 (1.46-2.61) | 1.40 (1.04-1.89) | 1.20 (0.88-1.63) | 1.09 (0.79-1.49) | 0.99 (0.72-1.38) | 1.00 (0.72-1.38) |
|  | 35y-<40y | 1.50 (1.27-1.76) | 1.31 (1.11-1.56) | 1.22 (1.02-1.45) | 1.16 (0.97-1.39) | 1.17 (0.97-1.41) | 1.17 (0.97-1.41) |
|  | 40y-<45y | Ref | Ref | Ref | Ref | Ref | Ref |
|  | 45y-<50y | 0.99 (0.85-1.14) | 1.06 (0.90-1.22) | 1.09 (0.93-1.27) | 1.09 (0.94-1.28) | 1.09 (0.93-1.27) | 1.09 (0.93-1.27) |
|  | 50y+ | 0.81 (0.67-0.99) | 0.92 (0.74-1.13) | 0.95 (0.76-1.18) | 0.97 (0.78-1.21) | 0.94 (0.75-1.17) | 0.94 (0.75-1.18) |
| Having older sibling | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 0.81 (0.72-0.91) | 0.75 (0.66-0.85) | 0.77 (0.67-0.88) | 0.77 (0.67-0.88) | 0.78 (0.68-0.89) | 0.78 (0.68-0.89) |
| Having younger sibling | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 0.97 (0.87-1.09) | 0.85 (0.75-0.97) | 0.90 (0.79-1.04) | 0.91 (0.79-1.04) | 0.84 (0.73-0.97) | 0.84 (0.73-0.97) |
| **Maternal childhood socioeconomic status** |  |  |  |  |  |  |  |
| Parental economic difficulties in childhood | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 1.54 (1.35-1.77) | 1.35 (1.17-1.56) | 1.21 (1.04-1.40) | 1.18 (1.01-1.37) | 1.16 (0.99-1.35) | 1.16 (0.99-1.35) |
| Maternal education | High school or less | 1.53 (1.27-1.85) | 1.41 (1.16-1.72) | 1.26 (1.02-1.55) | 1.09 (0.88-1.35) | 1.02 (0.81-1.27) | 1.02 (0.82-1.27) |
|  | Some college | 1.27 (1.05-1.54) | 1.26 (1.03-1.52) | 1.19 (0.98-1.45) | 1.11 (0.91-1.35) | 1.08 (0.88-1.33) | 1.08 (0.88-1.33) |
|  | College or more | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Other/Unknown | 2.52 (1.23-5.18) | 2.09 (1.08-4.04) | 2.35 (1.21-4.59) | 2.05 (1.04-4.04) | 1.59 (0.76-3.35) | 1.59 (0.76-3.34) |
| **Maternal health status** |  |  |  |  |  |  |  |
| Psychological distress | <5 | Ref |  | Ref | Ref | Ref | Ref |
|  | 5-<13 | 2.63 (2.31-2.99) |  | 2.41 (2.11-2.75) | 2.27 (1.98-2.61) | 2.04 (1.77-2.35) | 2.04 (1.77-2.35) |
|  | 13+ | 6.49 (5.26-8.00) |  | 5.64 (4.56-6.99) | 4.95 (3.97-6.17) | 4.14 (3.28-5.21) | 4.14 (3.28-5.21) |
| Maternal BMI | <18.8 | 0.92 (0.77-1.11) |  | 0.77 (0.63-0.94) | 0.77 (0.63-0.94) | 0.83 (0.68-1.02) | 0.83 (0.68-1.02) |
|  | 18.5-<25.0 | Ref |  | Ref | Ref | Ref | Ref |
|  | 25.0-30.0 | 1.15 (0.96-1.37) |  | 1.14 (0.94-1.38) | 1.09 (0.90-1.32) | 1.04 (0.85-1.27) | 1.04 (0.86-1.27) |
|  | 30.0+ | 1.68 (1.48-2.47) |  | 1.37 (0.92-2.03) | 1.28 (0.85-1.92) | 1.21 (0.80-1.83) | 1.21 (0.80-1.83) |
| Maternal history of smoking | Never | Ref |  | Ref | Ref | Ref | Ref |
|  | Used to smoke | 1.24 (1.06-1.45) |  | 1.04 (0.88-1.24) | 1.02 (0.86-1.20) | 0.99 (0.84-1.19) | 1.00 (0.84-1.18) |
|  | Current smoking | 1.82 (1.57-2.11) |  | 1.45 (1.22-1.72) | 1.35 (1.14-1.60) | 1.32 (1.11-1.57) | 1.32 (1.11-1.57) |
| **Current socioeconomic status** |  |  |  |  |  |  |  |
| Household income (yen) | <3 million | 2.24 (1.90-2.64) |  |  | 1.39 (1.14-1.70) | 1.35 (1.11-1.66) | 1.34 (1.08-1.66) |
|  | 3 million-<6 million | 1.41 (1.21-1.65) |  |  | 1.16 (0.98-1.37) | 1.15 (0.97-1.36) | 1.14 (0.96-1.36) |
|  | 6 million+ | Ref |  |  | Ref | Ref | Ref |
|  | Unknown | 2.16 (1.66-2.83) |  |  | 1.66 (1.23-2.22) | 1.54 (1.14-2.07) | 1.53 (1.13-2.07) |
| Lacking basic necessaities | No | Ref |  |  | Ref | Ref | Ref |
|  | Yes | 2.20 (1.92-2.51) |  |  | 1.32 (1.10-1.58) | 1.21 (1.01-1.45) | 1.21 (1.01-1.45) |
| Lacking payment capacity | No | Ref |  |  | Ref | Ref | Ref |
|  | Yes | 2.06 (1.78-2.38) |  |  | 1.08 (0.89-1.30) | 1.01 (0.84-1.23) | 1.01 (0.84-1.23) |
| **Maternal positive parenting behaviors** |  |  |  |  |  |  |  |
| Frequency of talking about school life | Frequently | Ref |  |  |  | Ref | Ref |
|  | Sometimes | 1.35 (1.17-1.56) |  |  |  | 1.40 (1.20-1.63) | 1.40 (1.20-1.63) |
|  | Not very often | 2.29 (1.88-2.78) |  |  |  | 1.98 (1.60-2.46) | 1.99 (1.60-2.47) |
|  | Never | 3.65 (2.37-5.62) |  |  |  | 2.20 (1.39-3.47) | 2.20 (1.39-3.47) |
| Frequency of cooking for child | Almost everyday | Ref |  |  |  | Ref | Ref |
|  | 4-5 times/week | 1.86 (1.43-2.42) |  |  |  | 1.21 (0.90-1.61) | 1.20 (0.90-1.61) |
|  | 2-3 times/week | 2.44 (1.74-3.42) |  |  |  | 1.63 (1.07-2.48) | 1.62 (1.07-2.47) |
|  | A few days/month | 1.52 (1.18-1.97) |  |  |  | 1.47 (1.10-1.97) | 1.47 (1.10-1.97) |
|  | Rarely | 1.24 (0.95-1.63) |  |  |  | 1.07 (0.79-1.47) | 1.08 (0.79-1.47) |
| Frequency of having breakfast (child) | Everyday | Ref |  |  |  | Ref | Ref |
|  | More of having | 1.85 (1.50-2.28) |  |  |  | 1.60 (1.26-2.02) | 1.60 (1.26-2.02) |
|  | Less of having | 2.26 (1.78-2.87) |  |  |  | 1.85 (1.44-2.40) | 1.85 (1.43-2.39) |
|  | Never | 1.87 (1.39-2.50) |  |  |  | 1.47 (1.06-2.04) | 1.47 (1.06-2.05) |
| Frequency of eating vegetables (child) | Everyday | Ref |  |  |  | Ref | Ref |
|  | 4-5 times/week | 1.23 (1.05-1.43) |  |  |  | 1.06 (0.90-1.25) | 1.06 (0.90-1.25) |
|  | 2-3 times/week | 1.68 (1.40-2.01) |  |  |  | 1.27 (1.04-1.55) | 1.27 (1.04-1.55) |
|  | Less than 1 time/month | 2.26 (1.61-3.16) |  |  |  | 1.69 (1.17-2.44) | 1.69 (1.17-2.44) |
|  | Never | 2.87 (1.73-4.75) |  |  |  | 1.98 (1.13-3.49) | 1.98 (1.12-3.48) |
| **Child maltreatment** |  |  |  |  |  |  |  |
| Physical abuse from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 3.73 (2.94-4.73) |  |  |  | 1.54 (1.16-2.05) | 1.54 (1.16-2.05) |
| Neglect from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 3.20 (2.57-3.98) |  |  |  | 2.02 (1.58-2.59) | 2.02 (1.58-2.59) |
| Psychological abuse from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 3.44 (2.99-3.95) |  |  |  | 2.20 (1.87-2.59) | 2.20 (1.87-2.59) |
| **Parental loss** |  |  |  |  |  |  |  |
| Marital status | Married | Ref |  |  |  |  | Ref |
| 　 | Unmarried/divorced/widowed | 1.59 (1.38-1.83) | 　 | 　 | 　 | 　 | 1.03 (0.86-1.23) |
| Note. All 34 municipalities in Kochi prefecture were adjusted in Model 1-5.  |  |  |  |  |  |

**Supplement 4**

|  |
| --- |
| The impact of maternal ACEs on child depressive symptoms (DSRS score) stratified by grades  |
|  |  | Total | Grade 5 | Grade 8 | Grade 11 |
|  |  | n=9,390 | n=2,784 | n=3,038 | n=3,568 |
| 　 | 　 | β (95% CI) | β (95% CI) | β (95% CI) | β (95% CI) |
| ACE total score (0-6) | 0 | Ref  | Ref  | Ref  | Ref  |
|  | 1 | 0.34 (0.12-0.56) | 0.11 (-0.28 to 0.50) | 0.45 (0.05-0.85) | 0.47 (0.12-0.83) |
|  | 2+ | 0.58 (0.28-0.89) | 0.77 (0.25-1.29) | 0.04 (-0.52 to 0.61) | 0.86 (0.36-1.37) |
| Note. All analyses adjusted child sex, maternal age, having older and younger siblings, maternal economic difficulties in childhood, maternal education, and all 34 municipalities in Kochi prefecture. |

**Supplement 5**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Results of logistic regression analysis (DSRS categories: Under 16=8,212 (87.5%); 16 or more=1,178 (12.5%)) | 　 | 　 | 　 | 　 |
|  |  | Crude model | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|  |  | n=9,390 | n=9,380 | n=9,380 | n=9,380 | n=9,380 | n=9,380 |
| 　 | 　 | OR (95% CI) | OR (95% CI) | OR (95%CI) | OR (95%CI) | OR (95%CI) | OR (95%CI) |
| ACE total score (0-6) | 0 | Ref  | Ref  | Ref  | Ref  | Ref  | Ref  |
|  | 1 | 1.21 (1.04-1.42) | 1.17 (0.99-1.37) | 1.11 (0.95-1.31) | 1.09 (0.93-1.28) | 1.08 (0.92-1.27) | 1.08 (0.92-1.28) |
|  | 2+ | 1.45 (1.19-1.77) | 1.39 (1.13-1.72) | 1.23 (0.99-1.53) | 1.16 (0.93-1.45) | 1.12 (0.89-1.41) | 1.13 (0.90-1.42) |
| **Basic demographics** |  |  |  |  |  |  |  |
| Child sex | Boy | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Girl | 1.66 (1.46-1.90) | 1.67 (1.46-1.92) | 1.69 (1.48-1.94) | 1.69 (1.48-1.94) | 1.76 (1.53-2.01) | 1.76 (1.53-2.01) |
| Grade | 5th | Ref | Ref | Ref | Ref | Ref | Ref |
|  | 8th | 2.01 (1.66-2.45) | 2.10 (1.71-2.57) | 2.08 (1.70-2.56) | 2.09 (1.70-2.56) | 2.18 (1.77-2.68) | 2.20 (1.79-2.71) |
|  | 11th | 3.02 (2.52-3.62) | 3.19 (2.60-3.90) | 3.19 (2.60-3.91) | 3.15 (2.56-3.87) | 3.19 (2.58-3.94) | 3.22 (2.60-3.98) |
| Maternal age | <35y | 1.01 (0.67-1.51) | 1.59 (1.03-2.45) | 1.52 (0.98-3.37) | 1.43 (0.92-2.24) | 1.37 (0.87-2.16) | 1.39 (0.88-2.19) |
|  | 35y-<40y | 0.87 (0.70-1.08) | 1.04 (0.83-1.30) | 1.00 (0.80-1.26) | 0.97 (0.77-1.22) | 0.96 (0.76-1.21) | 0.97 (0.77-1.22) |
|  | 40y-<45y | Ref | Ref | Ref | Ref | Ref | Ref |
|  | 45y-<50y | 1.19 (1.01-1.39) | 1.04 (0.89-1.23) | 1.05 (0.89-1.24) | 1.05 (0.89-1.24) | 1.06 (0.90-1.25) | 1.06 (0.90-1.25) |
|  | 50y+ | 1.61 (1.33-1.94) | 1.20 (0.98-1.47) | 1.19 (0.97-1.46) | 1.20 (0.98-1.48) | 1.21 (0.98-1.49) | 1.20 (0.97-1.48) |
| Having older sibling | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 1.01 (0.88-1.14) | 1.09 (0.95-1.26) | 1.11 (0.97-1.29) | 1.11 (0.96-1.29) | 1.08 (0.93-1.25) | 1.07 (0.92-1.24) |
| Having younger sibling | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 0.91 (0.80-1.03) | 0.94 (0.87-1.22) | 0.96 (0.83-1.11) | 0.96 (0.82-1.11) | 0.95 (0.82-1.10) | 0.93 (0.80-1.08) |
| **Maternal childhood socioeconomic status** |  |  |  |  |  |  |  |
| Parental economic difficulties in childhood | No | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Yes | 1.19 (1.02-1.40) | 1.03 (0.87-1.22) | 0.97 (0.82-1.15) | 0.94 (0.79-1.11) | 0.91 (0.76-1.08) | 0.91 (0.76-1.08) |
| Maternal education | High school or less | 1.41 (1.15-1.74) | 1.21 (0.97-1.51) | 1.19 (0.94-1.49) | 1.08 (0.85-1.37) | 0.99 (0.78-1.25) | 0.98 (0.77-1.24) |
|  | Some college | 1.16 (0.94-1.42) | 1.07 (0.86-1.32) | 1.06 (0.86-1.32) | 1.02 (0.82-1.27) | 0.97 (0.78-1.22) | 0.97 (0.78-1.22) |
|  | College or more | Ref | Ref | Ref | Ref | Ref | Ref |
|  | Other/Unknown | 1.71 (0.72-4.07) | 1.35 (0.57-3.19) | 1.44 (0.62-3.37) | 1.31 (0.55-3.12) | 1.26 (0.54-2.95) | 1.28 (0.55-2.99) |
| **Maternal health status** |  |  |  |  |  |  |  |
| Psychological distress | <5 | Ref |  | Ref | Ref | Ref | Ref |
|  | 5-<13 | 1.44 (1.24-1.67) |  | 1.43 (1.23-1.67) | 1.35 (1.15-1.57) | 1.30 (1.11-1.53) | 1.30 (1.11-1.53) |
|  | 13+ | 2.43 (1.92-3.09) |  | 2.42 (1.88-3.12) | 2.13 (1.64-2.76) | 2.04 (1.56-2.67) | 2.04 (1.56-2.67) |
| Maternal BMI | <18.8 | 0.85 (0.68-1.05) |  | 0.84 (0.67-1.05) | 0.84 (0.67-1.05) | 0.89 (0.71-1.12) | 0.89 (0.71-1.12) |
|  | 18.5-<25.0 | Ref |  | Ref | Ref | Ref | Ref |
|  | 25.0-30.0 | 1.18 (0.97-1.44) |  | 1.04 (0.85-1.27) | 0.99 (0.81-1.22) | 0.95 (0.78-1.17) | 0.95 (0.77-1.16) |
|  | 30.0+ | 1.54 (1.06-2.25) |  | 1.37 (0.91-2.05) | 1.28 (0.85-1.92) | 1.19 (0.79-1.79) | 1.19 (0.79-1.79) |
| Maternal history of smoking | Never | Ref |  | Ref | Ref | Ref | Ref |
|  | Used to smoke | 0.98 (0.82-1.18) |  | 0.94 (0.77-1.14) | 0.91 (0.75-1.11) | 0.90 (0.74-1.10) | 0.91 (0.75-1.11) |
|  | Current smoking | 1.22 (1.03-1.45) |  | 1.03 (0.85-1.24) | 0.95 (0.78-1.14) | 0.87 (0.72-1.06) | 0.88 (0.73-1.07) |
| **Current socioeconomic status** |  |  |  |  |  |  |  |
| Household income (yen) | <3 million | 1.66 (1.39-1.99) |  |  | 1.24 (1.00-1.53) | 1.21 (0.98-1.50) | 1.28 (1.02-1.61) |
|  | 3 million-<6 million | 1.13 (0.95-1.33) |  |  | 1.05 (0.88-1.26) | 1.04 (0.87-1.25) | 1.05 (0.87-1.26) |
|  | 6 million+ | Ref |  |  | Ref | Ref | Ref |
|  | Unknown | 1.23 (0.89-1.71) |  |  | 1.02 (0.73-1.43) | 0.96 (0.68-1.36) | 0.98 (0.69-1.39) |
| Lacking basic necessaities | No | Ref |  |  | Ref | Ref | Ref |
|  | Yes | 1.71 (1.47-1.99) |  |  | 1.29 (1.07-1.56) | 1.21 (0.99-1.47) | 1.22 (1.01-1.49) |
| Lacking payment capacity | No | Ref |  |  | Ref | Ref | Ref |
|  | Yes | 1.69 (1.44-1.99) |  |  | 1.17 (0.96-1.44) | 1.11 (0.91-1.37) | 1.11 (0.91-1.36) |
| **Maternal positive parenting behaviors** |  |  |  |  |  |  |  |
| Frequency of talking about school life | Frequently | Ref |  |  |  | Ref | Ref |
|  | Sometimes | 1.08 (0.93-1.25) |  |  |  | 1.18 (1.01-1.38) | 1.18 (1.01-1.38) |
|  | Not very often | 1.45 (1.16-1.81) |  |  |  | 1.59 (1.25-2.01) | 1.58 (1.25-2.01) |
|  | Never | 1.54 (0.87-2.73) |  |  |  | 1.77 (0.90-3.46) | 1.76 (0.89-3.47) |
| Frequency of cooking for child | Almost everyday | Ref |  |  |  | Ref | Ref |
|  | 4-5 times/week | 1.46 (1.09-1.96) |  |  |  | 1.06 (0.77-1.44) | 1.07 (0.78-1.47) |
|  | 2-3 times/week | 1.91 (1.32-2.75) |  |  |  | 1.32 (0.88-1.99) | 1.35 (0.89-2.03) |
|  | A few days/month | 0.99 (0.72-1.37) |  |  |  | 0.81 (0.59-1.13) | 0.82 (0.59-1.13) |
|  | Rarely | 1.38 (1.03-1.86) |  |  |  | 0.97 (0.71-1.32) | 0.96 (0.70-1.32) |
| Frequency of having breakfast (child) | Everyday | Ref |  |  |  | Ref | Ref |
|  | More of having | 1.87 (1.48-2.35) |  |  |  | 1.51 (1.19-1.93) | 1.52 (1.19-1.94) |
|  | Less of having | 2.41 (1.88-3.10) |  |  |  | 1.75 (1.34-2.28) | 1.76 (1.35-2.29) |
|  | Never | 2.92 (2.18-3.91) |  |  |  | 1.87 (1.37-2.55) | 1.86 (1.36-2.53) |
| Frequency of eating vegetables (child) | Everyday | Ref |  |  |  | Ref | Ref |
|  | 4-5 times/week | 1.42 (1.20-1.68) |  |  |  | 1.30 (1.09-1.55) | 1.30 (1.09-1.55) |
|  | 2-3 times/week | 1.80 (1.47-2.21) |  |  |  | 1.59 (1.28-1.98) | 1.60 (1.28-1.99) |
|  | Less than 1 time/month | 2.97 (2.10-4.21) |  |  |  | 2.46 (1.70-3.56) | 2.47 (1.70-3.58) |
|  | Never | 3.30 (2.03-5.38) |  |  |  | 2.91 (1.67-5.06) | 2.96 (1.71-5.12) |
| **Child maltreatment** |  |  |  |  |  |  |  |
| Physical abuse from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 1.06 (0.74-1.49) |  |  |  | 1.02 (0.68-1.52) | 1.02 (0.69-1.52) |
| Neglect from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 1.20 (0.90-1.62) |  |  |  | 1.37 (0.99-1.89) | 1.37 (0.99-1.89) |
| Psychological abuse from parents | No | Ref |  |  |  | Ref | Ref |
|  | Yes | 1.04 (0.86-1.26) |  |  |  | 0.99 (0.80-1.23) | 0.99 (0.80-1.22) |
| **Parental loss** |  |  |  |  |  |  |  |
| Marital status | Married | Ref |  |  |  |  | Ref |
| 　 | Unmarried/divorced/widowed | 1.28 (1.09-1.50) | 　 | 　 | 　 | 　 | 0.87 (0.72-1.06) |
| Note. All 34 municipalities in Kochi prefecture were adjusted in Model 1-5.  |  |  |  |  |  |

**Supplement 6**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Results of mediation analyses (SDQ) | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
|  |  | N | Coefficient | p | Bootstrap SE | 95% CI | % |
| **Mediator: Maternal psychological distress (K6)** | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,677 | 0.642 | <0.001 | 0.118 | 0.4 | 0.868 | 50.5 |
| 　 | Natural Indirect Effect | 　 | 0.629 | <0.001 | 0.048 | 0.54 | 0.728 | 49.5 |
| 　 | Total Effect | 　 | 1.271 | <0.001 | 0.125 | 1.029 | 1.517 | 　 |
| **Mediator: Current household income** | 　 | 　 | 　 | 　 |  | 　 | 　 |
| 　 | Controlled Direct Effect | 7,651 | 1.218 | <0.001 | 0.132 | 0.960 | 1.482 | 93.6 |
| 　 | Natural Indirect Effect | 　 | 0.083 | <0.001 | 0.017 | 0.055 | 0.122 | 6.4 |
| 　 | Total Effect | 　 | 1.301 | <0.001 | 0.131 | 1.043 | 1.563 | 　 |
| **Mediator: Lacking basic necessities** | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,924 | 1.257 | <0.001 | 0.124 | 1.02 | 1.501 | 100.0 |
| 　 | Natural Indirect Effect | 　 | 0.0001 | 0.991 | 0.0050 | -0.010 | 0.010 | 0.0 |
| 　 | Total Effect | 　 | 1.257 | <0.001 | 0.124 | 1.019 | 1.502 | 　 |
| **Mediator: Lacking payment capacity** | 8,924 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 　 | 1.261 | <0.001 | 0.124 | 1.022 | 1.505 | 100.3 |
| 　 | Natural Indirect Effect | 　 | -0.004 | 0.308 | 0.0040 | -0.0130 | 0.0020 | 0.0 |
| 　 | Total Effect | 　 | 1.257 | <0.001 | 0.124 | 1.019 | 1.502 | 　 |
| **Mediator: Frequency of talking about school life** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,675 | 1.284 | <0.001 | 0.123 | 1.046 | 1.523 | 101.5 |
| 　 | Natural Indirect Effect | 　 | -0.019 | 0.252 | 0.017 | -0.054 | 0.012 | -1.5 |
| 　 | Total Effect | 　 | 1.265 | <0.001 | 0.124 | 1.028 | 1.513 | 　 |
| **Mediator: Frequency of cooking for child** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,654 | 1.254 | <0.001 | 0.124 | 1.016 | 1.499 | 99.1 |
| 　 | Natural Indirect Effect | 　 | 0.011 | 0.085 | 0.007 | -0.0003 | 0.028 | 0.9 |
| 　 | Total Effect | 　 | 1.265 | <0.001 | 0.124 | 1.025 | 1.510 | 　 |
| **Mediator: Frequency of having breakfast** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,841 | 1.165 | <0.001 | 0.123 | 0.929 | 1.407 | 94.7 |
| 　 | Natural Indirect Effect | 　 | 0.065 | <0.001 | 0.016 | 0.034 | 0.099 | 5.3 |
| 　 | Total Effect | 　 | 1.230 | <0.001 | 0.124 | 0.992 | 1.473 | 　 |
| **Mediator: Frequency of eating vegetables** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,796 | 1.163 | <0.001 | 0.124 | 0.923 | 1.400 | 92.9 |
| 　 | Natural Indirect Effect | 　 | 0.089 | <0.001 | 0.018 | 0.058 | 0.127 | 7.1 |
| 　 | Total Effect | 　 | 1.252 | <0.001 | 0.125 | 1.009 | 1.495 | 　 |
| **Mediator: Physical abuse from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,605 | 1.214 | <0.001 | 0.124 | 0.971 | 1.454 | 97.0 |
| 　 | Natural Indirect Effect | 　 | 0.037 | 0.008 | 0.014 | 0.012 | 0.070 | 3.0 |
| 　 | Total Effect | 　 | 1.251 | 0.007 | 0.125 | 1.007 | 1.493 | 　 |
| **Mediator: Neglect from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,631 | 1.166 | <0.001 | 0.123 | 0.925 | 1.412 | 94.6 |
| 　 | Natural Indirect Effect | 　 | 0.067 | <0.001 | 0.017 | 0.038 | 0.106 | 5.4 |
| 　 | Total Effect | 　 | 1.233 | <0.001 | 0.124 | 0.997 | 1.483 | 　 |
| **Mediator: Psychological abuse from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,550 | 1.083 | <0.001 | 0.122 | 0.844 | 1.322 | 85.1 |
| 　 | Natural Indirect Effect | 　 | 0.189 | <0.001 | 0.028 | 0.138 | 0.250 | 14.9 |
| 　 | Total Effect | 　 | 1.272 | <0.001 | 0.126 | 1.024 | 1.513 | 　 |
| **Mediator: Parental loss** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,898 | 1.204 | <0.001 | 0.124 | 0.957 | 0.145 | 95.0 |
| 　 | Natural Indirect Effect | 　 | 0.062 | <0.001 | 0.014 | 0.040 | 0.094 | 4.9 |
| 　 | Total Effect | 　 | 1.267 | <0.001 | 0.124 | 0.124 | 1.511 | 　 |
| Note. All mediation analyses adjusted child sex, grade, maternal age, and having older and younger siblings. | 　 | 　 | 　 |

**Supplement 7**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Results of mediation analyses (DSRS) | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
|  |  | N | Coefficient | p | Bootstrap SE | 95% CI | % |
| **Mediator: Maternal psychological distress (K6)** |  | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,677 | 0.283 | 0.003 | 0.097 | 0.091 | 0.482 | 55.8 |
| 　 | Natural Indirect Effect | 　 | 0.224 | <0.001 | 0.023 | 0.182 | 0.273 | 44.2 |
| 　 | Total Effect | 　 | 0.507 | <0.001 | 0.097 | 0.318 | 0.697 | 　 |
| **Mediator: Current household income** | 　 | 　 | 　 | 　 |  | 　 | 　 |
| 　 | Controlled Direct Effect | 7,651 | 0.518 | <0.001 | 0.103 | 0.314 | 0.724 | 94.0 |
| 　 | Natural Indirect Effect | 　 | 0.033 | <0.001 | 0.010 | 0.016 | 0.055 | 6.0 |
| 　 | Total Effect | 　 | 0.551 | <0.001 | 0.103 | 0.343 | 0.755 | 　 |
| **Mediator: Lacking basic necessities** | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,924 | 0.497 | <0.001 | 0.096 | 0.307 | 0.688 | 100.0 |
| 　 | Natural Indirect Effect | 　 | 0.0004 | 0.918 | 0.004 | -0.007 | 0.009 | 0.1 |
| 　 | Total Effect | 　 | 0.497 | <0.001 | 0.096 | 0.307 | 0.688 | 　 |
| **Mediator: Lacking payment capacity** | 8,924 | 　 | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 　 | 0.500 | <0.001 | 0.095 | 0.310 | 0.691 | 100.6 |
| 　 | Natural Indirect Effect | 　 | -0.003 | 0.317 | 0.003 | -0.010 | 0.001 | -0.6 |
| 　 | Total Effect | 　 | 0.497 | <0.001 | 0.095 | 0.307 | 0.688 | 　 |
| **Mediator: Frequency of talking about school life** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,675 | 0.492 | <0.001 | 0.096 | 0.297 | 0.682 | 101.9 |
| 　 | Natural Indirect Effect | 　 | -0.009 | 0.255 | 0.008 | -0.027 | 0.006 | -1.9 |
| 　 | Total Effect | 　 | 0.483 | <0.001 | 0.097 | 0.288 | 0.674 | 　 |
| **Mediator: Frequency of cooking for child** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,654 | 0.495 | <0.001 | 0.097 | 0.298 | 0.688 | 99.4 |
| 　 | Natural Indirect Effect | 　 | 0.003 | 0.275 | 0.003 | -0.001 | 0.011 | 0.6 |
| 　 | Total Effect | 　 | 0.498 | <0.001 | 0.097 | 0.301 | 0.693 | 　 |
| **Mediator: Frequency of having breakfast** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,841 | 0.434 | <0.001 | 0.096 | 0.246 | 0.623 | 89.9 |
| 　 | Natural Indirect Effect | 　 | 0.049 | <0.001 | 0.013 | 0.026 | 0.075 | 10.1 |
| 　 | Total Effect | 　 | 0.483 | <0.001 | 0.096 | 0.292 | 0.674 | 　 |
| **Mediator: Frequency of eating vegetables** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,796 | 0.425 | <0.001 | 0.095 | 0.235 | 0.612 | 86.2 |
| 　 | Natural Indirect Effect | 　 | 0.069 | <0.001 | 0.014 | 0.045 | 0.100 | 14.0 |
| 　 | Total Effect | 　 | 0.493 | <0.001 | 0.096 | 0.305 | 0.686 | 　 |
| **Mediator: Physical abuse from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,605 | 0.473 | <0.001 | 0.097 | 0.276 | 0.666 | 99.0 |
| 　 | Natural Indirect Effect | 　 | 0.005 | 0.112 | 0.003 | 0.001 | 0.013 | 1.0 |
| 　 | Total Effect | 　 | 0.478 | <0.001 | 0.097 | 0.281 | 0.669 | 　 |
| **Mediator: Neglect from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,631 | 0.474 | <0.001 | 0.097 | 0.273 | 0.662 | 98.8 |
| 　 | Natural Indirect Effect | 　 | 0.006 | 0.167 | 0.005 | -0.002 | 0.018 | 1.3 |
| 　 | Total Effect | 　 | 0.480 | <0.001 | 0.097 | 0.284 | 0.669 | 　 |
| **Mediator: Psychological abuse from parents** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,550 | 0.453 | <0.001 | 0.097 | 0.253 | 0.648 | 95.4 |
| 　 | Natural Indirect Effect | 　 | 0.022 | 0.010 | 0.009 | 0.007 | 0.042 | 4.6 |
| 　 | Total Effect | 　 | 0.475 | <0.001 | 0.097 | 0.275 | 0.668 | 　 |
| **Mediator: Parental loss (parental divorce or death)** |  | 　 | 　 | 　 | 　 | 　 |
| 　 | Controlled Direct Effect | 8,898 | 0.474 | <0.001 | 0.096 | 0.278 | 0.667 | 94.8 |
| 　 | Natural Indirect Effect | 　 | 0.026 | 0.001 | 0.008 | 0.011 | 0.045 | 5.2 |
| 　 | Total Effect | 　 | 0.500 | <0.001 | 0.096 | 0.308 | 0.691 | 　 |
| Note. All mediation analyses adjusted child sex, grade, and having older and younger siblings. | 　 | 　 | 　 | 　 |