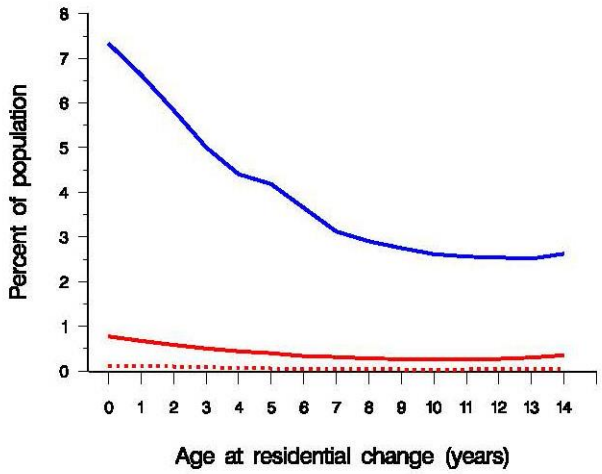
1. Clarification of Age Scales

Two age scales were applied in this cohort study. The exposure variables measured the number of residential changes in each age-year (0-14 years) from birth to 15th birthday. These were measured prior to initiation of follow-up and were treated as time-fixed variables. However, age during follow-up from 15th birthday and up to early middle age (early 40s) was treated as a time-dependent variable; thus as time progressed during follow-up cohort members' ages increased. Therefore age during follow-up was treated as a time-dependent variable.

2. Frequency of Residential Relocations in the Cohort by Age at Exposure

Appendix Figure 1. Frequency of residential mobility in the whole Danish population for each age-year of childhood.



Note: Blue line = single residential move in an age-year of childhood; Full red line = two residential moves in a year; Broken red line = 3 or more residential moves in a year.

3. Gender Differences in Incidence Rate Ratios

For all six adverse outcomes examined the patterns of association were generally similar for males and females, but for some outcomes the strength of association varied by gender. To formally assess this variation, interaction terms were fitted and gender-specific IRRs estimated for exposure to at least one residential move at age 14. This age at exposure was selected because the observed strength of association was greatest in relation to this period for all six outcomes. These results are shown in Appendix Table 1. For any psychiatric disorder ($p<0.0001$) the association was significantly stronger in males than in females, and vice versa for substance misuse ($p=0.044$) and for violent offending ($p<0.0001$). The elevation in risk of violent offending was markedly greater in females (IRR 5.27, 95% CI 4.85-5.71) than in males (IRR 3.26, 95% CI 3.15-3.38). There was no evidence of effect modification by cohort members' gender for risks of attempted suicide, natural death, or unnatural death.

Appendix Table 1. Gender-Specific IRRs With at Least One Residential Move at Age 14 Years

Adverse outcome	Cases (n)	IRR (95% CI): All persons	IRR (95% CI): Males	IRR (95% CI): Females	Interaction *p*-value
Attempted suicide	36,742	2.96 (2.85-3.08)	3.01 (2.84-3.18)	2.92 (2.78-3.08)	0.455
Violent offending	44,482	3.48 (3.37-3.59)	3.26 (3.15-3.38)	5.27 (4.85-5.71)	**<0.0001**
Any mental illness	135,015	2.26 (2.21-2.32)	2.55 (2.46-2.64)	2.07 (2.01-2.14)	**<0.0001**
Substance misuse	24,935	3.77 (3.62-3.93)	3.66 (3.48-3.85)	4.02 (3.73-4.32)	**0.044**
Unnatural death	5224	2.56 (2.30-2.85)	2.64 (2.34-2.96)	2.27 (1.74-2.90)	0.283
Natural death	3935	1.59 (1.36-1.84)	1.60 (1.31-1.94)	1.57 (1.22-1.98)	0.879

Note: Boldface indicates statistical significance ($p<0.05$)
IRR, incidence rate ratio

Thus, some gender differences in strengths of association were found. In particular, among those individuals exposed to residential relocation at age 14, there was a greater elevation in risk of subsequent violent offending among females than males. One can only speculate as to why this may be so. Perhaps young females who have been moved by their parents against their wishes

feel especially angered by the loss of existing friendships and peer support, and are then prone to expressing their consequent resentment in violent and aggressive ways. It could also be that some parents are more likely to move the family home because of an aggressive daughter than an aggressive son, in an attempt to shift them towards a less disruptive peer group. We adjusted the estimates linked with residential relocation at age 14 by aggregate number of prior moves through ages 0-13. The stronger association with violent offending in females versus males persisted ($p<0.0001$), although the ratio between the two gender-specific IRRs was smaller with this adjustment (female IRR 3.41, 95% CI 3.11-3.72; male IRR 2.38, 95% CI 2.30-2.47). It should, however, also be noted that the absolute risk of violent offending was much greater in males exposed to residential mobility in childhood than in similarly exposed females.

4. Detailed Exploration of Stratification by Parental SES

Please also refer to Figure 4 in the main text of the manuscript for interpretation of the additional results presented in this subsection. Appendix Table 2 presents interaction tests with parental SES strata specific to each age-year exposure period. With multiple significance testing accounted for using the Bonferroni correction[43] most of these interaction tests were significant with exposure at age 6 and younger, and almost none were significant for exposure at age 7 and older. This confirms that the patterns of association were homogeneous across the three parental SES strata if residential mobility occurred once children had commenced full-time education, with significant evidence of heterogeneity in relation to relocations that occurred during infancy and the early childhood years. As Figure 4 illustrates, the pattern of risk observed in the higher parental SES stratum was somewhat different from those seen in the middle and lower strata in this regard.

Appendix Table 2. Interaction Tests for Parental SES Stratification by Age at Exposure for Attempted Suicide and Violent Offending

Age-years of childhood	Attempted suicide: *p*-value for SES interaction	Violent offending: *p*-value for SES interaction
0	**0.0006**	0.056
1	**<0.0001**	0.015
2	**<0.0001**	**0.002**
3	0.011	0.005
4	**<0.0001**	**0.001**
5	**0.0031**	**0.0002**
6	**0.0004**	**<0.0001**
7	0.135	0.471
8	0.027	0.039
9	0.040	0.620
10	0.535	0.005
11	0.128	0.140
12	**0.0002**	0.447
13	0.027	0.348
14	0.247	0.796

Note: Boldface indicates statistical significance ($p<0.0033$, i.e., Bonferroni-corrected significance level: 0.05/15)

5. Total Number of Residential Relocations During Upbringing From Birth to 15th Birthday

Across all six adverse outcomes considered, the highest risks were among the small subgroup of cohort members who moved 9 or 10 or more times (Appendix Table 3). The much larger group that moved just once, mostly during infancy or early childhood, had modestly elevated risks. A 'dose-response' relationship is indicated, with the table's bottom row reporting trend statistics indicating the incremental increase in the IRR value with each successive move assuming a log-linear association between number of relocations and the IRR. Appendix Table 4 shows how these risk gradients were attenuated, but not entirely effaced, with adjustment for the full set of confounders assessed in this study. The particularly marked elevations in risk associated with residential relocation during early/mid-adolescence may to some degree be partially influenced by the frequency of previous moves during early and middle childhood.

Appendix Table 3. Incidence Rate Ratios (and their 95% CIs) Linked With Total Number of Residential Moves

Categorical model	% of cohort	Violent offending	Attempted suicide	Any psychiatric disorder	Substance misuse disorder	Unnatural death	Natural death
0	63.0	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)
1	19.8	1.19 (1.16-1.22)	1.21 (1.18-1.24)	1.22 (1.20-1.23)	1.32 (1.27-1.36)	1.10 (1.02-1.18)	1.11 (1.03-1.20)
2	9.3	1.82 (1.77-1.88)	1.74 (1.69-1.80)	1.58 (1.55-1.60)	2.08 (2.00-2.15)	1.44 (1.32-1.57)	1.25 (1.13-1.38)
3	3.9	2.28 (2.20-2.37)	2.22 (2.13-2.31)	1.89 (1.85-1.94)	2.68 (2.56-2.82)	1.64 (1.46-1.84)	1.31 (1.13-1.51)
4	1.9	3.08 (2.95-3.23)	2.71 (2.57-2.85)	2.23 (2.17-2.30)	3.41 (3.21-3.62)	2.17 (1.88-2.49)	1.48 (1.22-1.77)
5	1.0	3.69 (3.48-3.90)	3.39 (3.17-3.62)	2.61 (2.51-2.71)	4.23 (3.93-4.55)	2.12 (1.73-2.57)	1.38 (1.04-1.79)
6	0.5	4.29 (3.99-4.62)	3.99 (3.67-4.34)	2.80 (2.66-2.95)	4.78 (4.34-5.25)	3.16 (2.51-3.93)	2.03 (1.47-2.72)
7	0.3	4.86 (4.41-5.33)	4.19 (3.74-4.68)	3.12 (2.91-3.34)	5.33 (4.70-6.01)	3.40 (2.49-4.50)	1.79 (1.10-2.73)
8	0.2	6.16 (5.47-6.90)	4.81 (4.18-5.50)	3.27 (2.99-3.57)	6.10 (5.21-7.10)	2.99 (1.91-4.43)	1.83 (0.95-3.14)
9	0.1	6.93 (5.95-8.01)	5.62 (4.73-6.61)	3.52 (3.15-3.93)	6.79 (5.54-8.22)	4.04 (2.36-6.36)	3.59 (1.92-6.03)
10 or more	0.1	6.33 (5.56-7.16)	5.63 (4.87-6.46)	3.84 (3.50-4.21)	6.75 (5.71-7.92)	4.49 (3.00-6.42)	3.05 (1.75-4.87)
Trend [a]	-	1.27 (1.27-1.28)	1.25 (1.24-1.25)	1.19 (1.19-1.20)	1.29 (1.28-1.30)	1.18 (1.17-1.20)	1.10 (1.08-1.13)

Note: All IRR estimates adjusted for gender, age and calendar year period
[a] Summary estimate of the incremental increase in the IRR value with each residential relocation assuming a log-linear association between total number of moves and the IRR
IRR, incidence rate ratio

Appendix Table 4. Fully Adjusted Incidence Rate Ratios (and Their 95% CIs) Linked With Total Number of Residential Moves

Categorical model	% of cohort	Violent offending	Attempted suicide	Any psychiatric disorder	Substance misuse disorder	Unnatural death	Natural death
0	63.0	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)
1	19.8	1.11 (1.08-1.14)	1.18 (1.14-1.21)	1.14 (1.12-1.16)	1.20 (1.15-1.24)	1.15 (1.07-1.24)	1.12 (1.03-1.22)
2	9.3	1.40 (1.36-1.44)	1.41 (1.37-1.46)	1.31 (1.28-1.33)	1.55 (1.49-1.61)	1.34 (1.23-1.47)	1.18 (1.06-1.31)
3	3.9	1.50 (1.44-1.55)	1.58 (1.51-1.64)	1.41 (1.38-1.45)	1.71 (1.63-1.80)	1.39 (1.23-1.57)	1.16 (1.00-1.34)
4	1.9	1.73 (1.65-1.82)	1.68 (1.59-1.77)	1.50 (1.46-1.55)	1.86 (1.75-1.98)	1.65 (1.42-1.90)	1.22 (1.00-1.47)
5	1.0	1.81 (1.70-1.92)	1.85 (1.73-1.98)	1.60 (1.53-1.66)	2.02 (1.87-2.18)	1.46 (1.19-1.78)	1.06 (0.80-1.38)
6	0.5	1.92 (1.78-2.07)	1.99 (1.82-2.16)	1.59 (1.50-1.67)	2.07 (1.88-2.28)	2.05 (1.62-2.56)	1.49 (1.07-2.00)
7	0.3	1.96 (1.78-2.15)	1.92 (1.71-2.14)	1.66 (1.55-1.78)	2.11 (1.86-2.39)	2.05 (1.50-2.73)	1.25 (0.77-1.92)
8	0.2	2.31 (2.05-2.59)	2.05 (1.78-2.35)	1.65 (1.51-1.80)	2.20 (1.88-2.57)	1.70 (1.08-2.52)	1.22 (0.63-2.10)
9	0.1	2.54 (2.18-2.94)	2.31 (1.94-2.73)	1.72 (1.54-1.92)	2.45 (1.99-2.97)	2.23 (1.30-3.52)	2.33 (1.24-3.94)
10 or more	0.1	2.10 (1.85-2.38)	2.12 (1.83-2.44)	1.74 (1.58-1.91)	2.19 (1.85-2.58)	2.26 (1.50-3.24)	1.87 (1.07-3.01)

Note: All IRR estimates adjusted for gender, age and calendar year period, parental age at birth, urbanization, history of any mental illness in parent or sibling, parental SES.
IRR, incidence rate ratio

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