Does housing instability matter for youths’ educational attainment?

Findings from Swedish longitudinal register data.

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Supplementary Table S1. Estimates from selection models. Binary logistic regression. Odds ratios (robust standard errors in parentheses) N=40,622.

| Variables                              | One relocation | Repeated relocations | Eviction threat, no relocation | Forced relocation |
|----------------------------------------|---------------|----------------------|-------------------------------|-------------------|
| Previous relocations, 2006-2008 (0, ref.*) | 1.815***      | 2.296***             | 1.061                         | 2.354***          |
|                                        | (0.06)        | (0.12)               | (0.09)                        | (0.21)            |
|                                        | 2.444***      | 4.221***             | 1.098                         | 4.203***          |
|                                        | (0.15)        | (0.33)               | (0.16)                        | (0.51)            |
| Immigration (No, ref.)                 | 1.107         | 0.810**              | 1.280**                       | 0.819             |
|                                        | (0.05)        | (0.06)               | (0.11)                        | (0.10)            |
| Family type (Two-parent family, ref.)  | 2.601***      | 4.970***             | 1.679***                      | 2.587***          |
|                                        | (0.11)        | (0.39)               | (0.17)                        | (0.36)            |
| Single parent family                   | 3.261**       | 6.729***             | 1.552***                      | 3.410***          |
|                                        | (0.12)        | (0.51)               | (0.12)                        | (0.39)            |
| Other                                  | 4.775***      | 17.193***            | 1.089                         | 1.915             |
|                                        | (0.58)        | (2.60)               | (0.65)                        | (1.13)            |
| Highest parental educational level (Lower secondary or less, ref.) | 1.126*     | 1.015                | 1.064                         | 0.997             |
|                                        | (0.06)        | (0.08)               | (0.10)                        | (0.11)            |
| Tertiary or doctoral                   | 1.064         | 0.961                | 0.652***                      | 0.500***          |
|                                        | (0.06)        | (0.08)               | (0.07)                        | (0.07)            |
| Parental criminal conviction (No, ref.)| 1.145***      | 1.383***             | 1.925***                      | 2.576***          |
|                                        | (0.04)        | (0.08)               | (0.13)                        | (0.21)            |
| Parental psychiatric care (No, ref.)   | 1.089         | 1.427***             | 1.471***                      | 1.910***          |
|                                        | (0.06)        | (0.11)               | (0.14)                        | (0.20)            |
| Household disposable incomeb (Lowest quartile, ref.) | 1.029     | 0.949                | 0.774***                      | 0.831*            |
|                                        | (0.04)        | (0.06)               | (0.06)                        | (0.08)            |
| Third quartile                         | 0.874**       | 0.834*               | 0.408***                      | 0.516***          |
|                                        | (0.04)        | (0.07)               | (0.04)                        | (0.07)            |
| Fourth quartile                        | 0.995         | 1.051                | 0.223***                      | 0.290***          |
|                                        | (0.05)        | (0.09)               | (0.03)                        | (0.05)            |
| Parental social assistance (No, ref.)  | 1.401***      | 1.792***             | 2.976***                      | 3.512***          |
|                                        | (0.07)        | (0.14)               | (0.26)                        | (0.37)            |
| Type of municipality of residence 2008 (Metropolitan, ref.) | 1.019     | 1.128                | 0.863                         | 1.119             |
|                                        | (0.05)        | (0.12)               | (0.10)                        | (0.20)            |
| Large city                             | 1.240***      | 1.838***             | 1.165                         | 1.921***          |
|                                        | (0.06)        | (0.16)               | (0.11)                        | (0.29)            |
| Category                        | Coefficient 1 | Coefficient 2 | Coefficient 3 | Coefficient 4 |
|--------------------------------|---------------|---------------|---------------|---------------|
| Commuter/sparsely populated/manufacturing | 1.184***     | 1.926***     | 0.815         | 2.305***      |
|                                 | (0.06)        | (0.19)        | (0.10)        | (0.37)        |
| Other>25,000 inhabitants        | 1.289***     | 1.887***     | 0.991         | 2.301***      |
|                                 | (0.07)        | (0.19)        | (0.11)        | (0.37)        |
| Other<25,000 inhabitants        | 1.093        | 2.209***     | 0.633**       | 1.461*        |
|                                 | (0.06)        | (0.22)        | (0.09)        | (0.27)        |
| Constant                        | 0.087***     | 0.009***     | 0.040***      | 0.006***      |
|                                 | (0.01)        | (0.00)        | (0.01)        | (0.00)        |

a. ref. = Reference category
b. Equivalized by household size
*** p<0.01, ** p<0.05, * p<0.1
Supplementary Table S2. Estimates from outcome model. Binary logistic regression on graduation by type of residential instability. Odds ratios (robust standard errors in parentheses) N=40,622.

| Variables                                      | One relocation | Repeated relocations | Eviction threat, no relocation | Forced relocation |
|------------------------------------------------|----------------|----------------------|--------------------------------|-------------------|
| Girl (Boy, ref.)                               | 1.164**        | 1.000                | 0.942                          | 1.378             |
| Ageb                                           | 0.624***       | 0.896                | 0.773*                         | 1.028             |
| Merit value>160 (Merit value <160, ref)        | 5.198***       | 3.930***             | 5.994***                       | 4.223***          |
| Criminal convictions (0, ref.)                 |                |                      |                                |                   |
| 1                                              | 0.561***       | 0.723*               | 0.993                          | 0.647             |
| 2+                                             | 0.331***       | 0.383**              | 0.374*                         | 0.487             |
| Psychiatric care (No, ref.)                    | 0.749          | 0.999                | 0.770                          | 0.757             |
| Immigration (No, ref.)                         | 0.892          | 0.984                | 1.008                          | 1.006             |
| Family type (Two-parent family, ref.)          |                |                      |                                |                   |
| Step-parent family                             | 0.785**        | 0.690*               | 0.493***                       | 0.905             |
| Single-parent family                           | 0.806**        | 0.743*               | 0.936                          | 1.237             |
| Other                                          | 0.575*         | 0.470**              | 0.001***                       | 1.830             |
| Highest parental educational level (Lower secondary or less, ref.) |                |                      |                                |                   |
| Upper secondary                                | 1.047          | 1.094                | 1.367                          | 1.299             |
| Tertiary or doctoral                           | 1.237*         | 1.170                | 1.457                          | 1.301             |
| Parental criminal conviction (No, ref.)        | 0.783***       | 1.044                | 1.034                          | 0.710*            |
| Parental psychiatric care (No, ref.)           | 0.882          | 0.899                | 0.942                          | 0.757             |
| Household disposable incomec (Lowest quartile, ref.) |                |                      |                                |                   |
| Second quartile                                | 1.043          | 1.005                | 0.992                          | 1.577*            |
| Third quartile                                 | 1.207*         | 0.844                | 0.966                          | 1.122             |
| Fourth quartile                                | 1.138          | 1.176                | 0.841                          | 1.250             |
| Parental social assistance (No, ref.)          | 0.782*         | 0.781                | 0.858                          | 0.769             |
| Type of municipality of residence 2008 (Metropolitan, ref.) |                |                      |                                |                   |
| Suburban                                       | 1.139          | 1.524*               | 1.269                          | 1.296             |
| Large city                                     | 1.217*         | 1.600**              | 2.004***                       | 1.223             |
| Commuter/Sparsely populated/Manufacturing       | 1.117          | 1.390                | 1.479                          | 1.130             |
| Other>25 000 inhabitants                        | 1.451***       | 1.408                | 1.498                          | 1.216             |
| Other<25 000 inhabitants                        | 1.065          | 2.046****             | 1.582                          | 1.292             |
| Constant                                       | 0.696*         | 0.523*               | 0.324***                       | 0.272**           |

a. ref. = Reference category
b. Mean centred
c. Equivalized by household size
*** p<0.01, ** p<0.05, * p<0.1
### Supplementary Table S3. Covariate balance before and after Inverse probability-weighted regression adjustment (IPWRA)

| Variables                                                                 | One relocation<sup>a</sup> | Repeated relocations<sup>b</sup> | Eviction threat, no relocation<sup>c</sup> | Forced relocation<sup>d</sup> |
|---------------------------------------------------------------------------|----------------------------|----------------------------------|------------------------------------------|-------------------------------|
|                                                                           | **Standardized difference** | **Variance ratio**               | **Standardized difference**              | **Variance ratio**            |
|                                                                           | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted | Raw | Weighted |
| Previous relocations, 2006-2008 (<sub>0</sub>, ref.)                     |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |
| 1                                                                         | 0.344 | -0.006 | 1.652 | 0.995 | 0.476 | -0.004 | 1.835 | 0.997 | 0.153 | -0.003 | 1.309 | 0.996 | 0.472 | -0.006 | 1.833 | 0.996 |
| 2+                                                                        | 0.251 | -0.005 | 2.949 | 0.986 | 0.452 | -0.005 | 4.992 | 0.990 | 0.122 | 0.001 | 1.831 | 1.005 | 0.483 | 0.002 | 5.316 | 1.004 |
| Immigration (<sub>No</sub>, ref.)                                        | 0.071 | -0.020 | 1.137 | 0.967 | -0.028 | -0.013 | 0.946 | 0.973 | 0.468 | -0.025 | 1.775 | 0.985 | 0.188 | -0.020 | 1.359 | 0.974 |
| Family type (<sub>Two-parent family, ref.</sub>)                         |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |
| Step-parent family                                                       | 0.167 | 0.001 | 1.422 | 1.002 | 0.230 | 0.003 | 1.580 | 1.005 | 0.047 | 0.006 | 1.117 | 1.014 | 0.089 | 0.020 | 1.225 | 1.043 |
| Single-parent family                                                     | 0.527 | -0.006 | 1.305 | 1.000 | 0.756 | -0.002 | 1.244 | 1.001 | 0.491 | -0.002 | 1.306 | 1.000 | 0.885 | -0.020 | 1.171 | 1.014 |
| Other                                                                     | 0.112 | -0.002 | 2.992 | 0.987 | 0.234 | -0.007 | 6.632 | 0.969 | -0.053 | 0.000 | 0.423 | 1.000 | -0.031 | 0.002 | 0.637 | 1.038 |
| Highest parental educational level (<sub>Lower secondary or less, ref.</sub>) |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |
| Upper secondary                                                           | 0.083 | 0.006 | 1.002 | 1.000 | 0.115 | 0.004 | 0.999 | 1.000 | 0.175 | 0.008 | 0.989 | 0.998 | 0.285 | 0.024 | 0.952 | 0.989 |
| Tertiary or doctoral                                                     | -0.150 | 0.003 | 0.944 | 1.002 | -0.236 | 0.004 | 0.894 | 1.003 | -0.498 | 0.008 | 0.686 | 1.011 | -0.682 | 0.007 | 0.512 | 1.014 |
| Parental criminal conviction (<sub>No</sub>, ref.)                       | 0.080 | -0.009 | 1.117 | 0.988 | 0.185 | -0.002 | 1.257 | 0.998 | 0.451 | -0.019 | 1.505 | 0.993 | 0.595 | -0.023 | 1.561 | 0.998 |
| Parental psychiatric care (<sub>No, ref.</sub>)                          | 0.089 | -0.002 | 1.357 | 0.993 | 0.205 | -0.005 | 1.875 | 0.989 | 0.274 | -0.013 | 2.202 | 0.974 | 0.450 | 0.000 | 3.026 | 1.000 |
| Household disposable income (<sub>Lowest quartile, ref.</sub>)           |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |
| Second quartile                                                          | 0.099 | -0.004 | 1.120 | 0.996 | 0.080 | 0.005 | 1.097 | 1.005 | 0.189 | 0.010 | 1.214 | 1.008 | 0.150 | 0.020 | 1.176 | 1.018 |
| Third quartile                                                           | -0.225 | 0.007 | 0.750 | 1.011 | -0.325 | 0.003 | 0.627 | 1.006 | -0.348 | 0.007 | 0.599 | 1.014 | -0.424 | 0.004 | 0.505 | 1.009 |
| Fourth quartile                                                          | -0.143 | 0.008 | 0.864 | 1.010 | -0.185 | -0.002 | 0.820 | 0.998 | -0.619 | 0.003 | 0.322 | 1.009 | -0.670 | 0.005 | 0.266 | 1.020 |
| Parental social assistance (<sub>No, ref.</sub>)                         | 0.181 | -0.014 | 1.724 | 0.968 | 0.293 | -0.004 | 2.213 | 0.992 | 0.679 | -0.017 | 3.699 | 0.987 | 0.761 | -0.024 | 3.915 | 0.985 |
| Type of municipality of residence 2008 (<sub>Metropolitan, ref.</sub>)   |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |     |          |
| Suburban                                                                 | -0.065 | -0.004 | 0.889 | 0.992 | -0.173 | 0.004 | 0.704 | 1.011 | -0.113 | 0.005 | 0.807 | 1.010 | -0.243 | 0.002 | 0.587 | 1.005 |
| Large city                                                               | 0.047 | -0.005 | 1.048 | 0.996 | 0.065 | -0.005 | 1.067 | 0.995 | 0.147 | -0.004 | 1.141 | 0.997 | 0.089 | -0.010 | 1.091 | 0.992 |
| Commuter/sparsely populated/manufacturing                                | 0.000 | 0.009 | 1.000 | 1.015 | 0.052 | -0.005 | 1.088 | 0.992 | -0.107 | 0.002 | 0.817 | 1.005 | 0.120 | -0.015 | 1.199 | 0.981 |
| Other>25,000 inhabitants                                                  | 0.049 | 0.005 | 1.101 | 1.010 | 0.054 | -0.003 | 1.113 | 0.995 | 0.008 | 0.007 | 1.018 | 1.014 | 0.139 | 0.013 | 1.287 | 1.021 |
| Other<25,000                                                             | -0.027 | 0.001 | 0.933 | 1.002 | 0.116 | 0.010 | 1.294 | 1.020 | -0.145 | 0.000 | 0.654 | 1.001 | -0.038 | 0.019 | 0.908 | 1.053 |
a. Test for covariate balance: p < 0.05
b. Test for covariate balance: p < 0.05
c. Test for covariate balance: p < 0.05
d. Test for covariate balance: p < 0.05
e. ref. = Reference category
Supplementary Figure S2. Overlap plot: distribution of the propensity to belong to the unexposed group for those exposed to single relocation

Supplementary Figure S1. Overlap plot: distribution of the propensity to belong to the unexposed group for those exposed to repeated relocations

Supplementary Figure S3. Overlap plot: distribution of the propensity to belong to the unexposed group for those exposed to eviction threat

Supplementary Figure S4. Overlap plot: distribution of the propensity to belong to the unexposed group for those exposed to forced relocation