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Born to move? Birth order and emigration

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Background and motivation (1)

Studies on the interrelation between birth order and health

- later-born siblings generally perform worse than earlier-borns
- depression, mental distress, psychiatric deviation, anxiety, self-esteem, physical fitness
- mortality: particularly suicide and other external causes

Similar interrelations between birth order vs. intelligence, cognitive and non-cognitive skills, and educational attainment; poorer (or other type of) performance for later-borns

A number of potential explanations have been suggested

- siblings are part of a dynamically changing environment that become less cognitively stimulating when the family grows in size (confluence hypothesis)
- parental resources may decrease (resource dilution model)
- communicable diseases increase, and biological depletion of mothers with additional births

Background and motivation (2)

Another set of explanations: social environment within the family, and personality differences

- Offspring may occupy different niches in order to avoid inter-sibling competition
- Within-family bullying at the expense of later-born siblings

A particularly influential theory has emphasized how the within-family dynamics create more rebellious later-born children

Sulloway, F.J., 1996. *Born to Rebel: Birth Order, Family Dynamics, and Creative Lives*

- expressed through higher risk taking
- later-borns would then be more likely to engage in risky and rebellious behaviour

Some recent research (Rohrer et al. 2015) gives no support for this argument, however

- no association between birth order and the development of the Big Five personality traits

Aim

If more rebellious and higher risk taking in later-borns: **more likely to emigrate**

- Simply because migration, and particularly migration abroad, is a form of risk-taking

This research is, to our knowledge, the first to analyse this issue

Is there a positive association between birth order and the risk of emigration?

Main interest: **the hazard rate ratio of emigration by birth order**

- **does destination matter?** If more “exotic” destinations mean higher risk-taking

- **differences in the association by sex?** Women more likely to emigrate, but more risk-averse

Sibling fixed effects approach

A fundamental contribution of more recent studies on birth order effects:

sibling fixed effects models

- analyses within-family variation only, and not between-family variation
- minimises residual confounding from unmeasured time-invariant factors shared by siblings
- genetic factors, parenting style, (fixed traits of) the socioeconomic environment at childhood, parental health behaviours, etc.

Data, setup, models (1)

Based on entire population of Finland 1970-2020

Information on destination country for emigrants: 1987-2020 (emigration period)

Emigration as own decision and when being “rebellious and risk-taking”: at ages 18-25 years

<=> Birth cohorts 1970-2002

Persons with both parents identified (almost all: 4.9M persons)

Construct full-sibling groups (same mother and father)

Include sibling groups where all sibling are born 1970-2002

Exclude sibling groups where one or more siblings had lived abroad (or died) before age 17

Foreign-born hereby (effectively) excluded

Total number of siblings, siblings groups, and (first) moves abroad: 1,352,908, 549,842, 31,192

Data, setup, models (2)

Stratified Cox regressions where siblings share the same baseline hazard

Failure event is first emigration, right-censoring at age 26 or at death before age 26

A requirement is variance in the outcome: at least two siblings in the group, and at least one must have emigrated

Control variables (included stepwise):

- Birth year, Sex, Family situation (lives with... at age 17), Mother's labour market status (at age 17), Father's labour market status (at age 17), Mother's income quintile (at age 17), Father's income quintile (at age 17), Owner-occupied dwelling (at age 17)
- variation within sibling groups because measured at age 17

Competing risks approach by country-group (Nordic, Other Schengen, Any other)

Sex × Birth order

Hazard rate ratios, emigration to all countries, 18-25

Birth order	M1	M2	M3	M4	M5	M6	M7	M8	M9
First	1	1	1	1	1	1	1	1	1
Second	1.07*	1.06*	1.05*	1.07*	1.07*	1.07*	1.07*	1.07*	1.07*
Third	1.04*	1.06	1.07*	1.08*	1.08*	1.08*	1.08*	1.09*	1.09*
Fourth	1.05	1.08	1.11*	1.11*	1.11*	1.11*	1.12*	1.12*	1.12*
Fifth+	0.87	0.93	0.95	0.92	0.93	0.93	0.94	0.94	0.94

M1: No controls

M2: M1 + Birth year

M3: M2 + Sex

M4: M3 + Family situation

M5: M4 + Mother's labour market status

M6: M5 + Father's labour market status

M7: M6 + Mother's income quintile

M8: M7 + Father's income quintile

M9: M8 + Owner-occupied dwelling

* Significant at the 5% level

Hazard rate ratios, emigration by country-group, 18-25

Birth order	All	Nordic	Other Schengen	Any other
First	1	1	1	1
Second	1.07*	1.08*	1.10*	1.01
Third	1.09*	1.09*	1.22*	0.92
Fourth	1.12*	1.13	1.22	0.99
Fifth+	0.94	0.92	1.27	0.91
Number of moves	31,192	19,017	6,122	6,053

Adjusted for all control variables

* Significant at the 5% level

Hazard rate ratios, emigration by country-group, 20-25

Birth order	All	Nordic	Other Schengen	Any other
First	1	1	1	1
Second	1.09*	1.10*	1.16*	0.99
Third	1.12*	1.14*	1.31*	0.87
Fourth	1.14*	1.14	1.34*	0.95
Fifth+	0.98	0.98	1.28	0.83
Number of moves	26,579	15,647	5,533	5,399

Adjusted for all control variables + Own education (primary, secondary w/o matriculation exam, secondary w/ matriculation exam)

* Significant at the 5% level

Hazard rate ratios, Sex × Birth order, 18-25

	All	Nordic	Other Schengen	Any other
Man, first-born	1	1	1	1
Man, second-born	1.07	1.07	1.17	0.95
Man, third-born	1.09	1.09	1.34	0.86
Man, fourth-born	1.12	1.17	1.03	0.94
Man, fifth or higher-born	1.23	1.28	1.56	0.65
Woman, first-born	2.23	2.23	2.19	2.31
Woman, second-born	2.40	2.42	2.29	2.41
Woman, third-born	2.43	2.46	2.51	2.21
Woman, fourth-born	2.51	2.46	2.90	2.35
Woman, fifth or higher-born	1.78	1.65	2.37	2.41

Adjusted for all control variables

Significance not shown

Hazard rate ratios, Sex × Birth order, 20-25

	All	Nordic	Other Schengen	Any other
Man, first-born	1	1	1	1
Man, second-born	1.09	1.10	1.25	0.92
Man, third-born	1.11	1.13	1.42	0.81
Man, fourth-born	1.17	1.23	1.18	0.91
Man, fifth or higher-born	1.29	1.32	1.84	0.65
Woman, first-born	1.99	1.94	1.99	2.18
Woman, second-born	2.17	2.13	2.17	2.27
Woman, third-born	2.23	2.22	2.47	1.98
Woman, fourth-born	2.24	2.11	2.85	2.14
Woman, fifth or higher-born	1.63	1.54	1.94	2.02

Adjusted for all control variables + Own education

Significance not shown

HRRs, control variables, to all countries, 18-25 (Model 9)

Family situation (lives with...)		Mother's labour market status		Mother's income quintile	
Both parents and sibling(s)	1	Employed	1	First	1
Both parents but no sibling(s)	0.87*	Unemployed	1.09*	Second	1.01
Mother and sibling(s)	1.20*	Outside labour market	1.05	Third	0.92
Mother but no sibling(s)	1.00	Mother not present	0.95	Fourth	0.88
Father and sibling(s)	1.14			Fifth	0.96
Father but no sibling(s)	1.00	Father's labour market status		Father's income quintile	
New family with sibling(s)	1.09	Employed	1	First	1
New family without sibling(s)	1.04	Unemployed	0.97	Second	1.01
No parent, parents together	1.17*	Outside labour market	0.99	Third	1.01
No parent, parents separated	1.39*	Father not present	1.13	Fourth	0.94*
				Fifth	0.96
Sex		Birth year			
Man	1	1970-1974	1		
Woman	2.21*	1975-1979	1.40*	In owner-occupied dwelling	
		1980-1984	1.29*	Yes	1
		1985-1989	1.12*	No	0.94
		1990-1994	1.19*		
		1995-1999	1.32*		
		2000-2002	0.84		

* Significant at the 5% level

Conclusion

Is there a positive association between birth order and the risk of emigration?

“Yes, some evidence, but not monotonous or linear”

Does destination matter?

“Yes, but most evident association for Other Schengen and Nordic, not for Any other”

Differences in the association by sex?

“No, at least not a clear sex-specific pattern, in spite of large level difference in emigration risk”

THANKS!