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Appendix

Model M4 equation:

$$\mathrm{E}(y_{ijk} = 1 \mid \mathbf{x}_{ijk}, \zeta^{(2)}_{jk}, \zeta^{(3)}_{k}) = \hat{p}_{ijk} = \tag{1}$$

$$\Lambda(\beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \beta_3 x_{3ijk} + \beta_4 x_{4ijk} + \beta_5 x_{5ijk} + \beta_6 x_{6ijk} + \beta_7 x_{7,jk} \tag{2}$$

$$+ \zeta^{(2)}_{jk} + \zeta^{(3)}_{k} \tag{3}$$

$$+ \zeta'^{(2)}_{1jk} x_{1ijk} + \zeta'^{(2)}_{2k} x_{2ijk} \tag{4}$$

$$+ \beta_8 x_{1ijk} x_{2ijk} + \beta_9 x_{1ijk} x_{7,jk} + \beta_{10} x_{2ijk} x_{7,jk} \tag{5}$$

$$+ \beta_{11} x_{1ijk} x_{2ijk} x_{7,jk} \tag{6}$$

row (2): level-1 covariates (x_{1ijk} = gender – woman, x_{2ijk} = educational origin, x_{3ijk} = parental educational heterogamy – father's lower education; x_{4ijk} = parental educational heterogamy – mother's lower education; x_{5ijk} = occupational origin – technical, craft occupations; x_{6ijk} = occupational origin – professionals, administrative occupations, and level-2 covariate ($x_{7,jk}$ = educational expansion) with estimated intercept β_0 and parameters $\beta_1 ... \beta_7$;

row (3): random intercepts varying across periods $\zeta^{(2)}_{jk}$ and over countries $\zeta^{(3)}_{k}$;

row (4): random slopes for gender $\zeta'^{(2)}_{1jk} x_{1ijk}$ and educational origin $\zeta'^{(2)}_{2jk} x_{2ijk}$ varying across periods;

row (5): two-way interactions (gender by educational origin $x_{1ijk} + x_{2ijk}$; gender by expansion $x_{1ijk}\ x_{7ijk}$; educational origin by expansion) with estimated parameters β_8, β_9, β_{10};

row (6): three-way interaction (gender by educational origin by expansion $x_{1ijk} x_{2ijk} x_{7,jk}$) with estimated parameter β_{11}.

Table A1. Number of respondents in ESS data by years and countries

		Year											
		2002		2006		2010		2014		2018			
Country	Code	N	in age 25–34	N	in age 25–34	N	in age 25–34	N	in age 25–34	N	in age 25–34	*Total N*	*Total in age 25–34*
Austria	AT	2,257	334	2,405	310	2,259	425	1,795	281	2,499	334	*11,215*	*1,684*
Belgium	BE	1,899	294	1,798	230	1,704	247	1,769	242	1,767	266	*8,937*	*1,279*
Czechia	CZ	1,360	168	3,026	492	2,386	418	2,148	296	2,398	321	*11,318*	*1,695*
Denmark	DK	1,506	254	1,505	208	1,576	157	1,502	203	1,572	207	*7,661*	*1,029*
Estonia	EE	1,989	269	1,517	204	1,793	248	2,051	329	1,904	272	*9,254*	*1,322*
Finland	FI	2,000	293	1,896	275	1,878	273	2,087	263	1,755	220	*9,616*	*1,324*
France	FR	1,503	267	1,986	324	1,728	232	1,917	270	2,010	241	*9,144*	*1,334*
Germany	DE	2,919	363	2,916	363	3,031	385	3,045	384	2,358	316	*14,269*	*1,811*
Great Britain	GB	2,052	340	2,394	342	2,422	344	2,264	289	2,204	302	*11,336*	*1,617*
Hungary	HU	1,685	275	1,518	230	1,561	255	1,698	210	1,661	216	*8,123*	*1,186*
Ireland	IE	2,046	349	1,800	331	2,576	462	2,390	355	2,216	237	*11,028*	*1,734*
Italy	IT	1,207	212	1,529	232	960	140	2,626	345	2,745	315	*9,067*	*1,244*
Netherlands	NL	2,364	373	1,889	296	1,829	238	1,919	249	1,673	212	*9,674*	*1,368*
Norway	NO	2,036	375	1,750	273	1,548	228	1,436	191	1,406	197	*8,176*	*1,264*
Poland	PL	2,110	334	1,721	278	1,751	317	1,615	255	1,500	240	*8,697*	*1,424*
Portugal	PT	1,511	235	2,222	321	2,150	232	1,265	139	1,055	118	*8,203*	*1,045*
Slovakia	SK	1,512	284	1,766	338	1,856	251	1,847	287	1,083	107	*8,064*	*1,267*
Slovenia	SI	1,519	241	1,476	222	1,403	224	1,224	170	1,318	170	*6,940*	*1,027*
Spain	ES	1,729	275	1,876	359	1,885	336	1,925	280	1,668	208	*9,083*	*1,458*
Switzerland	CH	2,040	301	1,804	258	1,506	195	1,532	205	1,542	232	*8,424*	*1,191*
Total		*37,244*	*5,836*	*38,794*	*5,886*	*37,802*	*5,607*	*38,055*	*5,243*	*36,334*	*4,731*	*188,229*	*27,303*

Source: ESS data.

Table A2. Average proportion of people that finished tertiary educational level by country and time window (ages 25–34 in ESS data)

		ESS data / time window of tertiary transition					
		2002	2006	2010	2014	2018	
Country	Code	1987–1996	1991–2000	1995–2004	1999–2008	2003–2012	*Total mean*
Austria	AT	8.4	9.8	11.9	18.7	20.2	*13.8*
Belgium	BE	28.8	31.6	35.6	39.1	41.8	*35.4*
Czechia	CZ	11.7	11.3	11.7	13.4	18.3	*13.3*
Denmark	DK	22.7	24.9	29.9	34.7	38.0	*30.0*
Estonia	EE	19.7	26.9	27.9	30.2	34.7	*27.9*
Finland	FI	21.4	28.4	33.3	38.1	38.7	*32.0*
France	FR	21.9	25.0	30.7	37.0	41.1	*31.2*
Germany	DE	20.2	20.9	21.6	22.3	24.4	*21.9*
Great Britain	GB	20.8	25.1	29.7	34.7	38.9	*29.9*
Hungary	HU	10.5	13.1	15.1	18.1	23.2	*16.0*
Ireland	IE	23.7	26.4	32.8	38.4	45.3	*33.3*
Italy	IT	7.2	8.2	10.5	14.4	18.5	*11.7*
Netherlands	NL	23.0	24.4	27.1	31.6	36.9	*28.6*
Norway	NO	29.0	32.3	37.0	40.6	42.6	*36.3*
Poland	PL	13.5	13.2	15.7	21.7	31.1	*19.1*
Portugal	PT	13.7	13.3	14.4	17.3	22.4	*16.2*
Slovakia	SK	10.9	10.9	11.8	14.2	19.3	*13.4*
Slovenia	SI	12.8	15.8	18.9	23.4	29.1	*20.0*
Spain	ES	23.1	26.5	33.1	37.7	39.8	*32.0*
Switzerland	CH	22.7	23.3	25.7	30.0	35.1	*27.4*
Total mean		*18.8*	*20.3*	*23.8*	*27.7*	*31.6*	*24.4*

Source: Eurostat statistics (2022).

Note: Time windows are years in which respondents in age 25–34 in individual ESS data passed from upper secondary to tertiary education. The average proportions are computed from time windows.

Table A3. Contrast between women and men in probability of passing tertiary education transition by educational origin (ISLED) and levels of educational expansion

Gender			ISLED	Edu. exp. levels	Contrast	Str. err.	z	P>z
woman	vs	man	−SD2	−10	0.029	0.013	2.21	0.027
woman	vs	man	−SD2	−5	0.035	0.012	3.00	0.003
woman	vs	man	−SD2	0	0.041	0.011	3.72	0.000
woman	vs	man	−SD2	5	0.047	0.013	3.65	0.000
woman	vs	man	−SD2	10	0.053	0.018	3.03	0.002
woman	vs	man	−SD2	15	0.060	0.025	2.45	0.014
woman	vs	man	−SD2	20	0.067	0.033	2.04	0.042
woman	vs	man	−SD1	−10	0.050	0.013	3.77	0.000
woman	vs	man	−SD1	−5	0.059	0.011	5.30	0.000
woman	vs	man	−SD1	0	0.068	0.010	6.69	0.000
woman	vs	man	−SD1	5	0.079	0.012	6.71	0.000
woman	vs	man	−SD1	10	0.089	0.015	5.77	0.000
woman	vs	man	−SD1	15	0.099	0.020	4.85	0.000
woman	vs	man	−SD1	20	0.109	0.026	4.18	0.000
woman	vs	man	SD0	−10	0.074	0.014	5.46	0.000
woman	vs	man	SD0	−5	0.087	0.011	7.97	0.000
woman	vs	man	SD0	0	0.099	0.010	10.38	0.000
woman	vs	man	SD0	5	0.112	0.010	10.69	0.000
woman	vs	man	SD0	10	0.125	0.013	9.41	0.000
woman	vs	man	SD0	15	0.136	0.017	8.09	0.000
woman	vs	man	SD0	20	0.147	0.021	7.09	0.000
woman	vs	man	SD1	−10	0.091	0.019	4.68	0.000
woman	vs	man	SD1	−5	0.106	0.015	7.09	0.000
woman	vs	man	SD1	0	0.120	0.012	9.74	0.000
woman	vs	man	SD1	5	0.133	0.013	10.56	0.000
woman	vs	man	SD1	10	0.146	0.015	9.45	0.000
woman	vs	man	SD1	15	0.157	0.019	8.09	0.000
woman	vs	man	SD1	20	0.168	0.024	7.02	0.000
woman	vs	man	SD2	−10	0.090	0.026	3.45	0.001
woman	vs	man	SD2	−5	0.106	0.020	5.30	0.000
woman	vs	man	SD2	0	0.120	0.016	7.40	0.000
woman	vs	man	SD2	5	0.133	0.016	8.17	0.000
woman	vs	man	SD2	10	0.146	0.020	7.37	0.000
woman	vs	man	SD2	15	0.157	0.025	6.30	0.000
woman	vs	man	SD2	20	0.168	0.031	5.43	0.000

Note: ISLED 0 is standardized average ISLED. SD is standard deviation. Expansion level 0 is average expansion in %.